AMERICAN AGRICULTURIST

FOR THE

Farm, Garden, and Household.

"AGRICULTURE IS THE MOST HEALTHFUL, MOST USEFUL, AND MOST NOBLE EMPLOYMENT OF MAN."—Washington.

ORANGE JUDD COMPANY, Publishers and Proprietors, 245 Broadway.

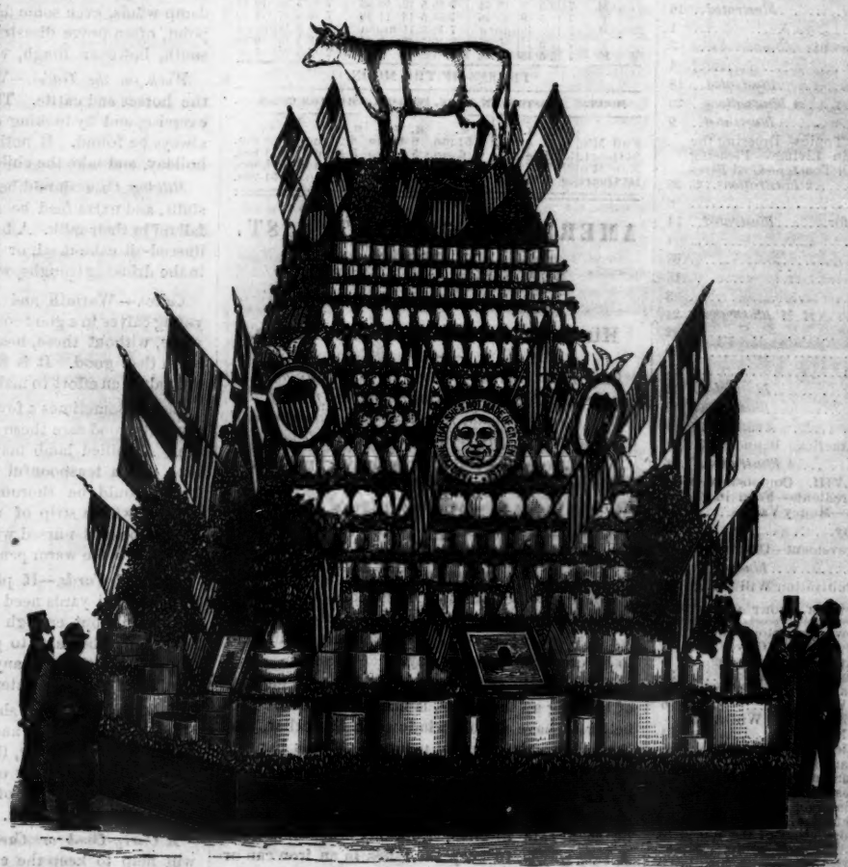
ESTABLISHED IN 1842.
German Edition issued at the same rates as in English.

TERMS: $1.50 per Annum in Advance, post-free; Four Copies $5.—Single Number, 15 Cents.

VOLUME XXXVIII.—No. 1. NEW YORK, JANUARY, 1879. NEW SERIES—No. 884.

A Remarkable Pyramid of Cheese.

At the recent dairy fair in New York, described on page 7, the most conspicuous objects were two immense pyramids of cheese, one on either side of the hall. That on the right contained ten tons of Vermont and Western cheese; that on the left was still larger; it was decorated with flags, ivy, evergreens, and upon its summit a fine Jersey cow,—dead of course, but handsomely mounted and quite life-like. The artist and engravers have made an accurate representation of it, in the picture on this page. This pyramid was constructed and exhibited by the Messrs. H. K. & F. B. Thurber, of New York. It comprised many varieties of home and foreign make. The lower course was a row of great cheeses, each weighing about 800 lbs., and ornamented with cards, bearing appropriate inscriptions, among which were: "And carry these ten cheeses, with the captains of their thousand, and look how their brethren fare." 1 *Samuel, xvii.*, 18; "A last course at dinner without cheese, is like a pretty woman with only one eye."—*Brillat Savarin.* Above these were arranged smaller American, and the peculiar shaped fancy and foreign cheeses. On one side was a Gruyere cheese, with the inscription from Hudibras: "And prove that she is not made of green cheese," and a jolly face representing "the man in the moon." The Messrs. Thurber contributed largely to the interest and success of the fair. At one side of the pyramid was a table, containing a large variety of foreign cheeses, including oddly shaped ones from Italy, made of goats' milk, and put up in bladders: the famous English Stilton and Cheddar varieties, Irish cheese, French and Swiss cheese, which the firm procured abroad and brought over especially for this exhibition.



A PYRAMID OF CHEESE, EXHIBITED AT THE INTERNATIONAL DAIRY FAIR.

Pleasant Figures Continued.

Large Exports.—Encouraging Prospects.

Never before in the past 25 years have we been able to present to our readers such a continuous succession of gratifying figures. These figures show that, as a nation, we are buying fewer foreign articles, are economizing in expenses, and at the same time are sending abroad a largely increasing amount of the productions of our own fields and manufactories. We are producing and selling to others far more than we are buying, and by so much bettering our financial condition. It matters not whether we are accumulating the difference, or using it in cancelling an indebtedness to other nations previously incurred. Last month we gave a variety of general figures, and brought the statistics down to Oct. 1. We have now the official reports to Nov. 1. These show that during October alone we exported products to the amount of $65,135,000, exclusive of specie, while we imported only $37,391,875; or, including specie, the exports were $66,530,736, and the imports $40,834,079, a balance in our favor of almost $30,000,000 for a single month, averaging about $740,000 for each business day. For the ten months, from Jan. 1 to Nov. 1, we exported, exclusive of specie, in round numbers, 600 million dollars worth ($599,073,799), and imported $362,003,787 worth, a balance in our favor of $237,070,012, a *gain* for each business day of $911,700, that is nearly a million dollars a day! And this, too, with the low prices of breadstuffs and other commodities sent abroad. The large foreign demand continues, and for the reasons explained last month, is likely to do so, until our large surplus is mainly exhausted, and a good opening left for the grain crops of 1879.

The prospects are encouraging for farmers, and, indeed, for all others. An abundance of food at low prices favorably affects all classes, and will greatly aid recuperation of business generally. The crops of 1878 were the largest, in the aggregate, ever produced. We can not reasonably expect a repetition of these another year, but what may be lacking in quantity will probably be made up in better prices. Let our farmers therefore lay out large plans for the year, during this leisure month. For the various spring crops to be put in, plan to do it well—to get the largest yield possible from the smallest area.

The advice last given above, needs to be taken to heart more and more by our cultivators. Ten bushels of wheat per acre may just about pay expenses, if it does even that, while 20 to 30 bushels may pay handsomely. Ten acres yielding 200 bushels, requires only about half as much plowing, harrowing, seed, and reaping over, as twenty acres producing only 200 bushels. The same reckoning applies to corn, and to every other crop, and to farm animals as well. Some animals scarcely yield flesh, work, or dairy products enough to pay their keeping. Others give double return from the same food. The winter months afford time and leisure to think, to read, and study books and papers on farming, to talk with others, and thus get every possible hint upon the question of what are the most profitable animals—*how* to increase the yield per acre—how to prepare the ground, and what varieties of seed to plant and sow, not only to yield well, but to render one as much as possible independent of the weather. The best seed, and a few drains, or a few open dead-furrows even, may save a crop from the disastrous effects of a wet season, should it come, and go far to decide the question of a profitable or an unprofitable year's work. 'Squire Bunker says the best manure is a liberal application of brains.

Medium Sized Fowls the Best.—I. K. Felch says; Many of the favorite breeds of fowls have suffered from the effect of breeding for large size. From 6 to 8 pound hens, and 9 to 11 pound cocks, for Light Brahmas; and 5 to 7 pound hens, and 7 to 9 pound cocks, for Plymouth Rocks, are the weights at which the greatest productiveness will be found, and to force the fowls beyond those figures, will result in a sacrifice of their laying qualities. The smaller breeds, such as Leghorns, Games and Hamburgs, will stand forcing, without deterioration, to a greater proportinate degree than those first mentioned. The rule should be, guard against excessive weight in the Asiatics, and loss of weight in small breeds, if great productiveness be the aim.

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Calendar for January, 1879.

Day of Month.	Day of Week.	Boston, N. England, N. York State, Michigan, Wisconsin, Iowa, and Oregon. Sun rises.	Sun sets.	Mo'n sets.	N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois. Sun rises.	Sun sets.	Mo'n sets.	Washington, Maryland, Virginia, Kentucky, Missouri, and California. Sun rises.	Sun sets.	Mo'n sets.
		H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.
1	W	7 30	4 38	0 53	7 25	4 44	0 53	7 19	4 49	0 53
2	T	7 30	4 39	2 0	7 25	4 44	1 56	7 19	4 50	1 54
3	F	7 30	4 40	3 3	7 25	4 45	2 53	7 19	4 51	2 54
4	S	7 30	4 41	4 7	7 25	4 46	4 1	7 19	4 51	3 55
5	S	7 30	4 42	5 9	7 25	4 47	5 0	7 19	4 52	4 56
6	M	7 30	4 43	6 8	7 25	4 48	6 1	7 19	4 53	5 54
7	T	7 30	4 44	rises	7 25	4 49	rises	7 19	4 54	rises
8	W	7 29	4 45	5 2	7 24	4 50	5 8	7 19	4 55	5 14
9	T	7 29	4 46	6 15	7 24	4 51	6 20	7 19	4 56	6 25
10	F	7 29	4 47	7 29	7 24	4 52	7 32	7 19	4 57	7 36
11	S	7 29	4 48	8 43	7 24	4 53	8 45	7 19	4 58	8 47
12	S	7 28	4 49	9 56	7 23	4 54	9 57	7 18	4 59	9 57
13	M	7 28	4 50	11 10	7 23	4 55	11 9	7 18	5 0	11 8
14	T	7 28	4 52	morn	7 23	4 56	morn	7 18	5 1	morn
15	W	7 27	4 53	0 25	7 22	4 57	0 22	7 17	5 2	0 20
16	T	7 27	4 54	1 41	7 22	4 59	1 37	7 17	5 3	1 33
17	F	7 26	4 55	2 56	7 21	5 0	2 51	7 17	5 4	2 46
18	S	7 25	4 56	4 9	7 21	5 1	4 3	7 16	5 6	3 57
19	S	7 23	4 58	5 15	7 20	5 2	5 8	7 16	5 7	5 1
20	M	7 24	4 59	6 8	7 20	5 3	6 2	7 15	5 8	5 56
21	T	7 23	5 0	sets	7 19	5 4	sets	7 15	5 19	sets
22	W	7 23	5 1	5 23	7 19	5 6	5 27	7 14	5 10	5 32
23	T	7 22	5 3	6 31	7 18	5 7	6 33	7 13	5 11	6 38
24	F	7 21	5 4	7 37	7 17	5 8	7 39	7 13	5 12	7 42
25	S	7 20	5 5	8 41	7 16	5 9	8 42	7 12	5 13	8 43
26	S	7 20	5 6	9 43	7 15	5 10	9 43	7 11	5 15	9 42
27	M	7 19	5 8	10 44	7 15	5 12	10 43	7 11	5 16	10 41
28	T	7 18	5 9	11 46	7 14	5 13	11 43	7 10	5 17	11 40
29	W	7 17	5 10	morn	7 13	5 14	morn	7 9	5 18	morn
30	T	7 16	5 11	0 43	7 12	5 15	0 44	7 8	5 19	0 40
31	F	7 15	5 13	1 51	7 11	5 17	1 46	7 7	5 20	1 41

PHASES OF THE MOON.

MOON.	BOSTON.	N. YORK.	WASH'N.	CHA'STON	CHICAGO.
	D. H. M.	H. M.	H. M.	H. M.	H. M.
Full M'n	8 7 4 mo.	6 52 mo.	6 40 mo	6 28 mo.	5 58 mo.
3d Quart.	15 6 16 mo.	6 6 mo.	5 54 mo	5 42 mo.	5 12 mo.
New M'n	22 7 7 mo.	6 55 mo.	6 43 mo	6 31 mo.	6 1 mo.
1st Quart	30 7 0 mo.	6 48 mo.	6 36 mo	6 24 mo.	5 54 mo.

AMERICAN AGRICULTURIST.

NEW YORK, JANUARY, 1879.

Hints for the Work of the Month.

[*The Hints and Suggestions in these columns are never copied from previous years, but are freshly prepared for every month, from the latest experience and observations, by practical men in each department.*

Keep Accounts.—Make a beginning now. For sundry directions, see articles in last month (page 466) and in the present number (page 19).

Keep a Diary or Daily Record.—This is a useful and interesting work, and the time spent will be well repaid, in its value for future reference.

Insurance.—See that a sufficient insurance is placed on the farm buildings and contents. This is a duty every man owes to himself, his family, and to his creditors if he has any.

Keep Out the Cold.—The old fashioned method of banking up the house, is not the best one. It is better to have double windows in the cellar, and the cellar wall properly pointed. If this has not been done, it may yet be, on a warm day.

Take Care of the Ashes.—Many fires occur through careless disposal of ashes. The ash house should be at a safe distance from any other buildings. A safe way is, to keep the ashes in an iron can or holder, until cool, and then throw them into the box or receptacle provided for them. Wood ashes are too valuable to waste, and coal ashes make an excellent absorbent in the earth-closet, and are very good for making hard foot paths.

A Supply of Fuel sufficient for some weeks' use, should always be kept at hand under cover. Descriptions of wood sheds and coal bins, have been frequently given in the *American Agriculturist*.

The Barns should be kept clean and tidy. The lot of useless rubbish so apt to gather in buildings, should be disposed of at least once a year. Whatever is useful should be stored and cared for.

Small Matters make up the sum of our comfort, and constant attention to them will not only save trouble, but will confirm a habit of looking after more important things.

The Daily Work should be done according to system. This will lighten labor and save time; things will be done in order, and less be forgotten.

The Cows should be cleaned before morning milking, then fed—the feed having been prepared, as far as possible, the previous afternoon. This, with the care of the horses, and a light feed to the small stock, will occupy the time before breakfast.

After Breakfast the small stock should be further looked to, fed and watered. The same hours as nearly as possible, should be observed each day for these matters. Animals are exacting as regards time, and are uneasy under irregularity. After the small stock are cared for, horses and cows should be watered, and the latter turned into the yard.

In Stormy Weather the stock are better under cover than exposed to the wintry blasts. It is a mistake to suppose that exposure makes them hardy: on the contrary they are weakened by it.

Fodder Racks.—The wasteful practice of throwing hay and fodder upon the ground to be fought over and trampled upon, is far too frequent. A cheap foddering rack, covered and protected from the weather, should be provided in every yard. See back numbers of *American Agriculturist* for plans.

Protection for Stock should be provided even in the Southern States, where the winters are relatively mild. Dry snow is not so chilling as a cold rain; damp winds, even some degrees above the freezing point, often prove disastrous. A shed open to the south, however rough, will answer as a shelter.

Work for the Teams.—Work should be found for the horses and cattle. They are all the better for exercise, and by looking around, useful work may always be found. If nothing better offers, make a holiday, and take the children for a drive.

Milking Cows should be kept dry and clean in the stalls, and extra feed be given to dairy cows that fall off in their milk. A few quarts of ground oats, linseed-oil cake-meal, or bran, stirred in the water in the drinking troughs, will increase the milk-flow.

Calves.—Warmth and cleanliness will keep the young calves in a good condition with light feeding, while, without these, heavy feeding will do more harm than good. It is useless to over-feed young animals in an effort to make up for the want of care.

Ewes.—Sometimes a few lambs will come in January. By good care these may be made very profitable. A chilled lamb may be restored by a warm bath and a teaspoonful of hot ginger tea. The lamb should be thoroughly dried and wrapped around with a strip of woollen cloth. The ewes should be well nursed with warm gruel for a few days. Provide warm pens for early lambing ewes.

Pens and Yards.—If plentiful litter is provided, the pens and yards need not necessarily be cleaned out often; but enough litter should be used to keep a dry bed and to prevent much heat in the manure. If there is any smell apparent, a light dusting of ground plaster will remove it.

A Barrel of Plaster should be kept in a handy place in every stable and manure cellar. Where this is used constantly, there will be freedom from the usual strong odor of stables and fermenting manure, and a saving of valuable material which would otherwise escape.

A Curry-Comb or Card and Brush freely used, will help to keep the cows, calves, and other cattle, as well as horses, in good health and comfort. If there is doubt about this, a short trial will convince any one that the practice is a profitable one.

Swine.—Pork is lower than for many years past. There have been about 10,000,000 pigs marketed within twelve months. That this vast number should have been disposed of at any price is an extraordinary fact. It proves that the market is practically unlimited, if the price is low enough. The aim must be to produce pork as cheaply as possible. The way to do this, is to keep only the best, and have pigs heavy enough for pork, without wintering over. A pig of the best breeds may be made to weigh 300 lbs. within a year. Only such pigs will pay at present, and poor stock won't pay at all.

A clear Head and good judgment are needed for success in business. Just now farmers need to be more thoughtful and careful than ever before. If times are bad, it is the greater reason why we should be liberal in getting all possible helps to make them better. A good agricul-

tural journal may be worth hundreds of dollars every year to any farmer, if he will only study it carefully. Few journals are prepared with more thoughtful care than the *American Agriculturist*. Its editors and writers are chiefly practical cultivators, and know what other cultivators need, and share their troubles and their successes. At the beginning of a new year it will be worth considering if the advice and information received during twelve months is not worth many times the price paid for it. Some of us, who mix much with other farmers, are glad to know that our work is appreciated and useful, and we wish to enlarge the sphere of our usefulness, by inducing every reader of the *American Agriculturist* to subscribe first himself, and ask his neighbors to benefit themselves in the same way.

Notes for the Orchard and Garden.

As the first month in the year is one in which the majority of our readers are prevented from working in their orchards and gardens, our Notes at the beginning of the year have, for several seasons, discussed general matters relating to their pursuits. Believing that one can make no better investment of his money and time than in procuring and studying the experience of others, as recorded in books, we last January devoted these Notes to a rather full review of the literature of the orchard and garden, and we would refer the reader who would know of the best sources of information to an account of the leading works there given.

"*Farming does not Pay,*" is a very common assertion in the older States, and the remedy most frequently suggested is for the farmer to "go West."—"Times have changed," is mournfully said by many a farmer, "the western corn, wheat, and other grains are brought here and sold for less than I can raise them."—It is very true that "times have changed," and the trouble with those who thus complain is, that they do not change with them. We would not discourage—but on the contrary would aid in all proper ways those who would make a new home in a new country. But *all* can not go West or South. Some, many, must, for one reason or another, stay in the older States where circumstances have placed them, and for the encouragement of such we would say that, in our opinion, the opportunities to the intelligent and industrious cultivator of the soil are quite as favorable there as they are anywhere. But success will not attend the farmer with 30 or 50 acres who undertakes to compete with the western farmer with hundreds of acres in raising corn, wheat, and other grains. Farming in the older States, at least in the more thickly settled portions of them, is rapidly becoming what, for the want of a better name, we call

Market Farming, which is intermediate between market-gardening proper, and the old style of farming, and in many cases it may be wise to convert the farm into a market and fruit garden, provided that the farmer can so convert himself, and learn new ways, as to make the change desirable. To explain what we mean by Market Farming: One living within moderate distance of a town where there are large stables belonging to the horse-railroads or stage lines, may find a demand for all the carrots he can raise, at a paying price; if there are factories, especially with European laborers, cabbages and "sprouts" will sell well. In such a town sweet-corn will be in demand, and the field that only gives him 25 or 30 bushels to the acre, if put into sweet-corn will bring much more money when green, and leave a valuable crop of fodder. If one has children old enough to pick them, green peas may pay. A crop of fall sown spinach will be sure to bring money early in the spring long before other crops are ready, at a time when money is needed, and be off in time to use the land for a second crop. Onions pulled, bunched and marketed when half or two-thirds grown, usually bring more to the acre than ripe onions. These are a few of many things that require no more care or skill than ordinary farm crops; but farmers neglect them merely because they have never raised them.

Small Fruits should not be overlooked, as these often bring better prices in small towns than in large cities, and their culture presents no difficulties that ordinary intelligence can not overcome.... Among the crops that farmers rarely cultivate for their own use or for sale is Asparagus, a plantation of which, once properly made, lasts for years and will pay a good dividend every spring.

Small Farming, with its Small Economies, will pay in the thickly settled portions of the older States, if the demands of the near market are properly consulted. If one is near a summer resort, where there are large hotels, his choice of crops will be different from the one whose market is a factory village. Of course our idea of market farming includes the keeping of domestic animals, cows, poultry, pigs, bees, or whatever under the circumstances will pay. This kind of farming can only be successful by

A Close Attention to Details.—Many will say it is "puttering business," and that they can not "bother with small matters." But a boy who goes into a store does not think half yards, ounces, and pints are details that he can not "bother" with. If one can, from a bed a few feet square, sell tomato or cabbage plants for more than he can get for a whole acre of corn—and this is no improbable case—details at once assume an importance. We do not expect any one to throw aside a system that he is familiar with, and take up one about which he knows almost nothing. But it seems to us that,

At the Beginning of the Year, when plans are being made, and each one naturally looks about to see where he may improve upon his methods and increase his income, it will be well, in the light of such hints as are here given, to see if some change for the better may not be made in the crops, with a more satisfactory return for the labor. The great point is to make a beginning; a start being once made in the direction of improvement, the change from old methods to new need go on only so rapidly as the new seem to be desirable and safe.

Orchard and Nursery.

At the beginning of the year it may be well to say to new readers that the above heading does not imply that these Notes are for commercial nurserymen. They know too well that their success largely depends upon doing the right thing at the right time, and do not need to be reminded of it. Our Notes on the nursery relate to such nursery matters as the farmer and orchardist is likely to need instruction and help. We have before suggested that

A Farm Nursery might in some localities prove profitable, especially in places far distant from any nursery. One can buy root grafts (*i. e.*, roots with grafts already set and waxed) or trees in bud (stocks budded last summer, the buds of which are dormant, but will grow next season) of some western nurseries that make a specialty of them, at very low rates; these set in nursery rows and well cultivated for three or four years, will make excellent trees for sale or for setting out—vastly better than are likely to be furnished by any travelling "agent." Raising young nursery stock is interesting work for boys, who should learn to bud and graft. A most excellent instructor in these, and also for all

Nursery Operations, from raising the stocks to planting the trees, is Barry's "Fruit Garden," and though the title does not suggest it, there is no better guide for orchard management..

In Planting an Orchard, begin now to select and order the trees. Run no risks. Nothing is more discouraging than to cultivate trees 5 or 8 years, and when they begin to bear find they are not true to name. It is a disaster for which there is no remedy, and while to get trees direct from a nursery of reputation may cost a few dollars more in freight than to buy them from a peddler, the difference is as nothing compared with the risk of ordering from unknown and irresponsible parties. We do not recommend one nursery in preference to another. We advise those about to plant to send for catalogues to those who advertise with us, make selections, and order as early as possible.

Varieties to Plant.—In making selections for an orchard, the question should not be, what are the best varieties, but what are the best that can be grown in your locality. If there are any fruit-growers in the neighborhood, get their experience; if one is in a new country, where information of this kind can not be obtained, the next best is the opinion of a nurseryman of good reputation.

For Family Use, the orchard should contain varieties from the earliest to the latest, the greater number of trees being of good keeping kinds.

For Market Fruit the selection will depend upon whether the market is near at hand, or the fruit is to be shipped to a distance. One near a town will find showy early apples, which do not keep long or transport well, more profitable than later kinds.

Young and Old Orchards need such attention as suggested last month. Briefly, protect young trees from large animals by care of fences and gates.... Trap or shoot rabbits; smearing the trunks with blood or raw meat of any kind will keep them off. ....Tramp light snow around young trees so firm that mice cannot work beneath it....If cions have not been cut, do it now in a mild spell, label and store in saw-dust, moss, or sand, and keep in a cool place....Make channels to carry off surface water, wherever needed...Cart out manure to the orchard.

Fruit Garden.

Under this head is placed whatever relates to the cultivation of what are generally known as the small fruits. In many cases these are cultivated in the kitchen garden, and in many more, we regret to say, they are not cultivated at all. There are so many advantages in having a compartment devoted especially to these fruits, that we advise it to be done where practicable—yet, the absence of a "fruit garden" need deter no one from growing the fruits. When we consider the small outlay required to begin with, the ease of cultivation, and how acceptable they are, we wonder that they should be regarded as a luxury anywhere.

If there is any one respect in which farmers—take the country through—do not live up to their privileges, it is in the matter of small fruits. The table of the city mechanic is better supplied with these fruits than that of many a wealthy farmer. We hope to see the time when every farmer's family shall have their fill of fruits, from the beginning of strawberries to the end of grapes.

The Chief Reason why small fruits are scarce on large farms, is, that the preparatory work comes in spring, when the farmer is overwhelmed with other matters. The farmer's wife, the boys, or even the girls might look after these. There is no lack of

A Plenty of Good Guides.—Barry's "Fruit Garden," Fuller's "Small Fruit Culturist," or Roe's "Manual of Small Fruits" are each excellent on planting and cultivation, while the catalogues of dealers set forth the claims of the varieties.

But Small Fruits Pay, and this aspect of the question should be considered by those who live near a market. Growers within 50 miles of New York think that their fruit must go to the city, and they send it past smaller places, where it would bring a better price, to the crowded city market, where it brings a poor one. Probably the same occurs in the neighborhood of other large cities. Cultivate the home market. Many extravagant statements have been made as to the great profits of small fruit culture, and such works as "Ten Acres Enough," have led people into disastrous speculations. It is easy to cypher from the yield of a bed, a few feet square, what would be the yield of an acre, of five, or ten acres in strawberries, and such statements have done much to discourage small fruit culture. But from our own experience and observation we have no doubt that in almost any locality near a flourishing village or town they will, take one year with another, return a very satisfactory profit.

The Succession in small fruits is: Strawberries, raspberries, currants, gooseberries (usually sold green), blackberries, and grapes. Of course, there is some lapping, the late varieties of one kind coming in with the early sorts of the next. Those who have had no experience in these are at loss

How to Begin.—If one has the money to invest, plantations may be made this spring, but many, whose means are restricted, would like to make a

beginning; such may purchase a few plants of each variety, and propagate them to obtain a supply for a planting. This will, of course, take time and cause the loss of a year with strawberries, and of two or three years with the shrubs. The works referred to give directions for propagation, and seasonable hints are to be found in these Notes.... We therefore commend the consideration of a

Fruit Garden to the farmer, primarily as a source of health and comfort to his family, and as affording light and healthful occupation to its younger members, and, secondarily, as a source of profit.

Work to be Done in gardens already established.—Whatever of pruning has been omitted, should be completed on mild days.....The autumn has been so mild that we have not, up to the present time, Dec. 15, covered the strawberry beds; it is better to wait until the freezing of the soil indicates settled cold weather, as strawberries are perfectly hardy, and the covering is more to avert injury to the roots by frequent thawing and freezing, than to protect from the cold....Coarse manure may be applied around currants and gooseberries; the soluble portions will find their way into the soil, leaving the rest as a mulch in hot weather.

Kitchen and Market Garden.

In the introductory Notes, we have suggested that many farmers may cultivate with profit, several crops that are regarded as belonging to the garden rather than to the farm. Those who undertake to raise crops which they have not grown before, should study the best methods, as followed by those who had profitable experience in such culture. "Gardening for Profit," by Peter Henderson; "Money in the Garden," by P. T. Quinn, and "Farm Gardening and Seed Growing," by F. Brill, are all excellent works, each giving the experience of its author; together they form a library of great value, and we do not see how one who proposes to make the most out of his land can well dispense with either.

Care of Produce.—Up to the middle of December, the problem has been, not to protect our crops from the frost, but to keep them dormant. In such mild weather, the nights are appreciably cooler, and the root cellar should be left open at night and be closed during the day. Roots and celery in trenches, should have only sufficient covering to keep off the sun, and it would be better if this were done by means of boards raised sufficiently to allow the air to circulate beneath them.

Cold Frames present a similar difficulty, and every care in the way of shading, must be given in such weather, to keep the plants dormant if possible.

Manure-Making is one process favored by this mild weather, and while decomposition goes on rapidly, prevent overheating by turning and watering, if the interior be dry.

The Hoe and Spade, wherever the soil is not too wet, may be kept at work in mild weather, and thus facilitate the spring operations.

Implements should be overhauled and put in order, and the stock replenished. Extra plow-points, cultivator teeth, and duplicates of parts likely to be broken, save many a half day's work.

Seeds.—Overhaul the stock; if in doubt as to the vitality of any, there is time to test them by sowing in a pot or box of earth in a warm room.

Sundry Matters.—Provide a supply of pea-brush and bean-poles....Make markers of various widths, and dibbles....A well-made wooden reel for the garden line, is better than the weak iron ones sold at the stores....Labels or marking stakes should be provided; have these so large that they can not be hoed up without some trouble.

Flower Garden and Lawn.

Beyond caring for the walks, and preventing injury by heavy snows, but little can be done here except in planning for next season....Evergreens especially are liable to injury; if damp snow lodges in the top and freezes there, there is danger that the branches may be broken or twisted out of shape, causing deformity; it should be shaken out when it first falls. Accumulations of snow should be removed from the lower limbs for fear of similar accidents.

Greenhouse and Window Plants should now be looking at their best, and new growth and bloom repay the care bestowed upon them. .....Chrysanthemums, as they pass out of flower, should have the tops cut back, and the pots put in a frame or the cellar....Bring bulbs and other plants that were potted for forcing, to the greenhouse or window, watering gradually at first, and giving it more freely as they increase their foliage ....When the flowers of Hyacinths and other bulbs begin to fade, cut off the flower-stalk, and, if it is desired to keep the bulbs for planting out, let the leaves continue until they fade....Should very cold nights occur, draw the plants back from the windows; if freezing is feared, cover with a sheet or blanket properly supported above them....Give all smooth-leaved plants an occasional sponging, one leaf at a time; those with rough leaves may have the dust removed by showering; covering the plants with a paper or muslin screen while sweeping is going on, will aid greatly in keeping them free of dust....When air can be admitted from outside without a direct cold current upon the plants, do so, if but for a few minutes....Insects will increase as the days lengthen; all the larger ones, like scale and mealy-bug, can be picked off, or scrubbed off with a brush and soap-suds. Frequent showers applied to the lower surface of the leaves, as well as the upper, will check the red-spider; and tobacco, whether in the form of smoke, liquid or powder, will kill plant lice....Worms in pots do injury by making channels in the soil, and compacting the rest; by turning out the ball, they may often be picked off; if this fails, water with perfectly clear lime-water, and then with rain water.

Our Steel Plate Engraving, "The Farmer's Pride."

This magnificent work of art, painted by JEROME THOMPSON, the eminent landscape painter, and engraved by MARSHALL, "The Master of the Art in America," is receiving deservedly flattering encomiums from every quarter. Those whose orders have not been already filled, must bear with us a little, inasmuch as the immediate demand for the picture has exceeded our capacity for getting them off to subscribers. From this time forward, however, we expect to be able to send them as fast as called for, and we hope during the next few weeks to place this work in Two Hundred Thousand Homes. No Steel Plate Line Engraving of equal workmanship, size, and character, has ever before been supplied as a Presentation Picture. It will indeed be a most acceptable and pleasing ornament, alike in the lowliest dwelling and most palatial mansion. In answer to inquirers, we have to say: the Engraving is supplied *only to bona-fide* subscribers to the *American Agriculturist* for 1879. The price to all others, pre-paid, is $5.00. For full particulars see page 35.

A Premium for Every Subscriber.

Except in some small places, where nearly everybody already takes this paper, there are very few of our readers who do not *each* know at least two others who would be profited by the perusal of such a paper, and who would take it if its merits were explained. The Table, on last page of Cover, names 20 desirable articles, one of which will be presented to any one sending his own and two other subscriptions at $1.50 each a year. It is very easy for a multitude of people to *each* make up a larger list and get a more costly Premium. The articles are described and illustrated in the November number. *An Illustrated Descriptive Sheet will be sent free to any one desiring it.*

Clubs can at any time be increased by remitting for each addition, the price paid by the original members: or a small club may be made a larger one at reduced rates, thus: One having sent 6 subscribers and $7, may afterwards send 4 names more and $3, making 10 subscribers for $10.00; and so for the various other club rates.

containing a great variety of Items, inc'uding many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

WILL YOU JOIN The 20,000, who have obtained, *without cost*, one or more of the valuable Premium Articles, offered *free* to those who forward the names of some of their friends and neighbors as subscribers to this Journal? They are good articles, many of them very valuable, and **This Month of January** is a *good time* to secure them. See last cover page, and if you have it not, send for the Illustrated Descriptive *Premium List*. A postal card, giving your address, and saying "send premium list" will bring one free.

American Agriculturist MICROSCOPE Still Available.—We are glad to announce that we shall be able to supply this valuable little instrument to new subscribers, and to old ones who have not had it, up to December 31, 1878, for 40 cents at the office, or deliver it anywhere in the United States or Territories for 60 cents; and on and after January 1, 1879, and during the year 1879, for 50 cents at the Office, and for 70 cents delivered as above. This applies only to subscribers who have not had one. To all others the price will be the same as through dealers, viz.: $1.50 each, or $1.65 if delivered free. The 3 *lenses*, alone, would cost more than this, in any other form. Over a hundred thousand of our readers have already enjoyed their use.

As a source of information, we always advise our readers to go through the advertising pages carefully. Thousands of inquiries come to us about implements, seeds, plants, animals, etc., which are directly answered in the business columns. Besides, seeing what others have, and how they describe their wares, is quite likely to suggest some new thought that will be useful.

The Rapidly Increasing Circulation of the *German Agriculturist* affords us gratifying assurance, that its many improvements are being observed and appreciated. The splendid full-page engraving which now appears in every number, is richly worth the whole year's subscription price. Every German cultivator and laborer on the farm, or in the garden, should have the paper; while its varied household departments make the journal invaluable to every German home, either in the Old World or the New.

Be Early.—This month is none too early to begin to lay out plans, to study up implements, the best varieties of seeds to plant or sow, and *where to find them*. It is a good time to send to dealers for their catalogues and circulars, find what is in market, and the prices, and make camparisons. Dealers are glad to supply information, and a penny postal card will bring what is desired. As soon as decided, it is well to get orders into the hands of dealers early, even for the plows and mowers, etc., wanted next summer. They will have time to prepare and meet such orders well and be without excuse for delay. Our business columns have the cards of many trustworthy manufacturers and dealers. In writing to them for circulars, or catalogues, it is well to inform them that you are members of the *Agriculturist* family; they will thus know what you expect of them, and what we expect of them, in the way of fair dealing and promptness.

Bound Copies of volume 37, and of every previous volume back to Vol. XVI. (1857), neatly bound, with gilt backs, Index, etc., are supplied at $2 each (or $2.30 if sent by mail). See Publishers' Notes, 2d cover page.

Send us Sketches for Engravings.—We invite every reader who has made, or uses, or sees others use, any new device or contrivance, from the smallest item upward, which will help others in any way, to send an account of it for the *American Agriculturist*, describing it plainly, and giving some outlines and markings that will enable us to construct a clear engraving. No one need hesitate on account of the rudeness of drawings or sketches. We keep a corps of artists and engravers who know how, and whose business it is, to put such things into proper form. Some most valuable hints have come in this way from farmers who never put a sketch of any kind on paper before. Don't omit the Indoor matters. The Housekeeper's work needs all the aid

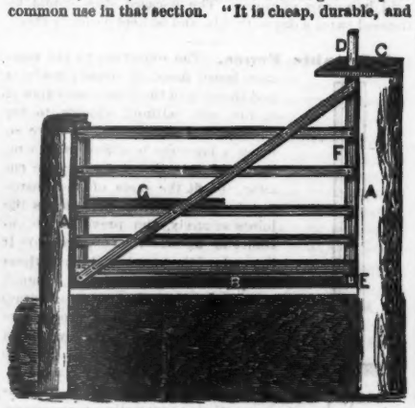
it can get. We mean that in the future, even more than in the past, these engravings shall be a distinguishing and most valuable feature of this journal, making it superior to any other. For some time past from 50 to 70 such engravings have appeared in each number, including the five new pictures on every first cover page; and we shall be quite glad to increase the illustrations, as the supply of new topics furnishes materials. These engravings bring an object, an implement, a contrivance, a mode of work, right to the eye and understanding, far more clearly than any amount of words could do.

"Will it Pay to Keep a Cow, in Village or City?" asks a reader of the *American Agriculturist*, who is a professional man, living in a village. He "has a stable, can get pasturage during six summer months at 37½ cents a week; a boy will drive the cow to and from pasture, and milk her night and morning, and feed and milk her in winter for one-sixth of her milk. Hay costs $12 a ton; bran, 1¼ cents per lb. I can buy milk at 4 cents per quart, or sell any surplus to neighbors at the same price."—A fair cow ought to average 10 quarts a day, 270 days in a year, or 2,700 quarts. Deducting one-sixth, or, say, 500 quarts, for the boy, leaves 2,200 quarts, at 4 cents, equal to $88. Six months' pasturage, $10; about 3 tons of hay, $36; 1,000 lbs. bran, or 6 lbs. a day for six months, $13. Total cost, $58. Profit, $30. The value of the calf, and especially of the manure, should be worth much more than the risk and any depreciation in value. At these figures of cost, the cow would pay $8 profit, reckoning the milk at only 3 cents per quart. The *best* profit would come thus: Buy in spring a fresh milch-cow, a fair milker of common breed; keep her from breeding; milk her 6 to 8 months, or until she ceases to give 7 quarts or more a day; then dry her quickly, feeding a few bushels of corn meal, until she gets in good condition for beef, and sell her to the butcher. Farrow cows thus treated, take on flesh very rapidly, and make very good beef, if only 6 to 8 years old. They will sell for nearly as much for beef as they cost in spring, and the winter's keep, and loss of three months' time is saved. We much prefer a farrow cow's milk, especially for younger children. A fresh, good milch cow, bought in autumn, will yield fairly during winter, and though farrow will keep up milk on summer pasture, and can be beefed in autumn, or when she fails in profitable milk-flow. We should keep our own farrow cow, even if compelled to reside in a city, hire a stable, and feed hay, meal, and bran.

The Wisconsin Dairymen's Association will hold its sixth Annual Convention at Kenosha, Jan. 22-23. Kenosha is in one of the oldest and best developed dairy regions of the North-west. The meetings of this Association have been of much value to the dairymen. Hon. D. W. Curtis, Ft. Atkinson, Wis., is the Secretary.

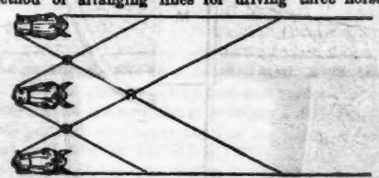
The Iowa Fine Stock Breeders' Association will hold its Annual meeting at Desmoines, Jan. 8-10. This is also the date and place for the Annual meeting of the State Agricultural Society. F. B. Stacy, Stacyville, Iowa, is Secretary of the Breeders' Association.

Tennessee Farm Gate.—"W. O. Wiggins," Cleveland, Tenn., sends a sketch of a farm-gate in quite common use in that section. "It is cheap, durable, and



so easily made that the slightest knowledge of the use of tools is all that is required to do a good job. The posts *A*, *A*, are generally of chestnut and from 8 to 12 inches in diameter, and are better round than square. *B* is a piece of timber, with its upper surface flattened, 4 to 6 inches wide, and level with the surface of the ground; it is made to fit tightly between the posts and tends to keep the hinge-post from leaning under the weight of the gate. The lower end of the hinge-post is secured in place by cobble-stones and earth well packed. The upright, *F*, is made long and has a journal on each end, the upper one, *D*, passing through a hole made in the plank *C*. The lower journal *E*, fits into a hole in the timber *B*, completing the hinge. The piece of plank *C*, is pinned or spiked on top of the hinge-post. The latch *G*, is an ordinary sliding-bar fitting in a mortise made for it in the post. Make the journal-post of 3 x 3 oak or pine, the latch-post of 2 x 3 pine, the horizontal bars of 1 x 8 ash or pine, except lower one, which should be a 1 x 6 inch board, and the diagonal piece 1 x 3. Make the gate no higher than 5½ feet, and thus avoid useless weight. It is the fault of many gates that they can not hold their own weight, and are constantly coming apart and making trouble. This gate will swing either way if the ground is level. There are no iron hinges to be breaking or coming off. There is no money outlay except for a few nails or bolts." [Line the hole in which the upper journal turns, and cover the bearings of the lower journal with leather, and there will be little friction if they are kept well oiled.—Eds.]

Lines for Driving three Horses Abreast.—In reply to an enquiry of "G. B. S.," we illustrate a method of arranging lines for driving three horses



abreast. There are but two lines, each one having two leaders, which buckle to the bits upon each side. The long leaders cross the ring in the saddle upon the middle horse's back; the short ones cross in a ring, here shown, which may be fastened to one of the short leaders.

How to Know a Steel-Plate Engraving.—"A Subscriber" writes: "I wish you would tell me how to know a real steel-plate engraving when I see it. I have a picture received as such, but one of my neighbors says it is only a '*litograph*,' while another says it is a '*photo-lithograph*.'"——You can generally tell a steel-plate engraving by the fact that the color or ink is upon *raised* lines and points, as seen around the edges. In ordinary engravings the printing ink is pressed *into* the paper from raised surfaces. In steel-plate printing, the lines and points are cut *into* the plate with a burin or sharp hard tool. An ink-roller is run over the surface, which fills up all the lines and indentations made. The whole surface is then wiped and rubbed clean and polished bright. The plate paper is then laid on and pressed so powerfully that it goes down into the lines and picks out the ink or colors left below the surface when wiping it. This process of inking and cleaning has to be gone through with carefully for *each* impression taken, and a man has to work hard to print more than fifty or sixty sheets a day from a large plate.

The Beautiful Steel-Plate ENGRAVING, now going out to our readers, will undoubtedly be highly esteemed by all who are good judges of genuine engravings of this kind. The leading figure in the foreground and her surroundings, the other figures more remote, the trees, the several buildings, almost obscured by foliage and by distance, the clouds, the play of light and shade, all make up a charming view. It is interesting to think, when looking at such a picture, that the *many thousands* of lines and points of color which make up the ground-work, the light and shade, indeed the whole surface, were each patiently cut into the plate of *steel*, by an artist's hand guided by an artist's eye; that a false stroke of the fine-pointed tool over the whole plate would have produced a blemish; that cutting a little too deep here, or too shallow there, would have spoiled the light or shade. This *line* engraving will mellow and improve by age, and will grow upon one the longer he *studies* it, and will be quite as attractive in after years, as now. We enjoy knowing that it will be an ornament, and give pleasure, in many tens of thousands of homes, all over the land. If this journal were worth nothing in itself, we feel quite sure that the Engraving would alone be worth much more than the small sum paid for both of them and their delivery. But we mean to make the paper a source of pleasure, instruction and profit.—May we not ask our readers to exhibit both the paper and the picture to their friends and neighbors, and invite them to avail themselves of both of them? This Engraving ought to adorn every dwelling, and the *American Agriculturist* SHALL be made worthy of the perusal of every one.

Live Stock Going to Europe Successfully.—An important item of news came from London by telegraph, Dec. 5. The steamer Brazilian, leaving Boston Nov. 11, on Dec. 4 landed at Birkenhead, opposite Liverpool, 253 head of live cattle, including 40 prize animals, each weighing more than 2,000 lbs., several cows in calf, and **1,100** live sheep. Though at a period when high winds prevail on the ocean, *not a single animal was lost during the voyage*, and all arrived in good condition. This shows what can be done, and will be done more largely than ever, especially now that the restrictions upon imported cattle are lifted, as noted elsewhere. With our broad pastures and magnificent corn-growing territory, we can compete successfully with all of Western Europe in supplying live and dead meats. This is another most encouraging outlook for American farmers. One important lesson is, that we should make every effort to grade up our cattle by the diffusion of superior male stock. Shorthorn bulls ought to be in great demand now.

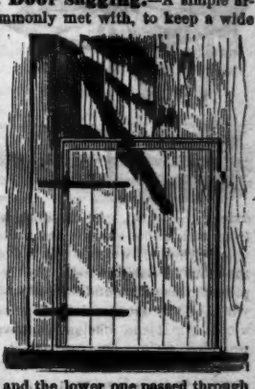
California Raisins.—The crop of 1878 is the largest ever produced in the State, the estimates of the California papers ranging from 70,000 to 100,000 boxes.

Becoming a Veterinary Surgeon.—"Memphian," of Memphis, Tenn., asks if he can become a veterinarian by studying books on the subject, as he is not able to attend the college in New York, and wishes us to advise him as to the proper books.—Our reply to this is a most positive NO! If our young man begun to read by himself, he would at once take up diseases and their cures, which should be the very last. The first study should be the anatomy and physiology of domestic animals, and these can not be properly learned, unless he can dissect them, which is not practicable, except at a veterinary college, under proper instructors. He should fully understand the action of every part in health, in order to know when it is diseased; then he should study the various forms of disease, and as much of veterinary practice is surgical, he should see and assist in the various operations, which can only be done at a veterinary hospital. We would by all means encourage our young friend, if inclined towards it, to study veterinary medicine, and to make every sacrifice to this end, but we would most earnestly dissuade him from the attempt to become a self-instructed veterinarian, and thus add, however unintentionally, to the number of half-qualified or not at all qualified empirics who all over the country bring the veterinary profession into contempt.

Pampas Grass Plumes.—The Pampas-grass (*Gynerium argenteum*) has magnificent soft silky plumes nearly two feet long, that are much prized for parlor decoration. This grass succeeds in California far better than it does in any Atlantic State, and its plumes are much finer than those produced elsewhere. According to a Santa Barbara paper, Mr. Joseph Sexton of that place has this year forwarded 40,000 plumes to San Francisco, mostly to be sent from there to eastern cities.

Smoking Clover Seed.—The uncertainty of law is illustrated in a recent trial in England under the *Adulteration of Seeds Act*. The law defines "to dye seeds," as meaning "give to seeds by any process of coloring, dyeing, sulphur smoking, or other artificial means, *the appearance of seeds of another kind*." As the accused only dyed over old clover seeds, to make them look like new clover seeds, and not like seeds of "*another kind*," he escaped all penalties, though the judges did properly give him a piece of their mind, and expressed sincere regret that, as "law was law," they could not detain him.

To Prevent a Door Sagging.—A simple arrangement not uncommonly met with, to keep a wide barn-door from sagging, is represented in the engraving. A light rod of ¼ to ⅜ inch iron, is attached by rings and bolts to the door near its outer edge, and to a point on the side of the building directly over the hinges of the door. Thus attached, the rod is practically a part of the door, and swings with it on the same axis. The upper eye-bolt is of course inserted into a post or girt, to hold it firmly, and the lower one passed through the frame of the door and a stout cleat fastened to the inner side. Though large swinging doors to barns and other buildings, are fast being replaced by sliding doors there are still many of the old fashioned sort, that would be more serviceable, by an attachment of this description.



Illinois Agricultural Institute.—The Illinois Industrial University, at Champaign, will hold an Agricultural Institute January 27-31. In some respects this Institute will be unlike others of the same name, as the leading feature will be courses of lectures on practical agricultural topics, and on the sciences directly relating to agriculture, by members of the faculty. There will

also be addresses and general discussions by farmers in attendance. It is announced that the chief object of the Institute is to give young farmers who cannot regularly attend the University sessions, an opportunity to get a fair idea of some of the most important principles of agricultural science and practice.

The Population of the World, according to the latest German estimates we have seen, is 1,340,145,000; of whom 413,000,000 are reckoned as Christians (including the Protestant, Catholic, and Greek Churches); Israelites, 7,000,000; Mahomedans, 120,000,000, and the rest numbering over 700,000,000, are reckoned as heathens.

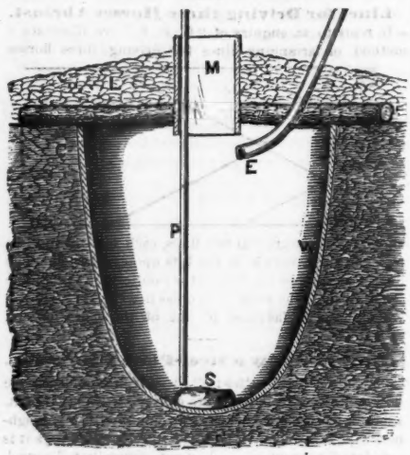
Labor in a Vegetable Garden.—"J. B.," Normal, Ill., wrote to inquire how much vegetable garden one man and four boys from 8 to 10 years old, with all appliances furnished, could tend. This being a matter with which our contributor, Mr. Peter Henderson, is perfectly familiar, the letter was referred to him, and he writes: "Much would depend on the kind of crop grown and on the condition of the soil. In our Jersey market gardens, where we have a rich sandy loam, and grow crops so close that all are worked by hand-weeding, the average labor employed is one man per acre. This includes preparing ground, manuring, planting, and working the crop up to maturity, as well as the washing, tying, and preparing of the vegetables for market. This, of course, is for the *double* crops, such as: *first* cabbage, lettuce, beets, onions, etc., in spring, followed up by celery, herbs, beets, etc., as the *second* crop. If the condition of things where J. B. resides, is the same as here, one man and four boys from 8 to 10 would not cultivate well more than an acre and a half in vegetables, for the four boys would not be likely to do the work of more than the half day's work of a man, after deducting attendance at school.

Small Printing-Presses, when introduced several years ago, met a general want, especially among those tradesmen, such as seedsmen and druggists, who use a great variety of labels, and with country store-keepers at a distance from printing offices, who could stamp their bags and wrappers. These soon started an active competition in the manufacture of presses, reducing the price it is true, but reducing the quality a great deal more, until some of those offered in flaming advertisements are worth little more than their value as old iron. In an article like a printing-press, with many moving parts, which must work with ease and accuracy, there is a point beyond which cheapness can only be attained at an expense of quality. Among the really good small presses, is the "Model Press," advertised elsewhere by J. W. Danghaday; these have been carefully examined and they appear to fully sustain the claims of the makers. A good small press is an excellent thing for a boy of mechanical tastes; we know of several intances where boys make a clever sum by printing handbills for store-keepers and others, in places were there is no printing office.

A Handy Drying Rack.—An ingenious improvement on the ordinary styles of drying horses in use at the back door of every thrifty farm-house, is represented in the engraving. It consists simply in a light buggy wheel that has served its time in its first field of usefulness, mounted on a low post. The upper end of the post is made to receive the hub like the axle of the wheel. At the door where we saw the one from which this sketch was made, were two of these wheel-driers—if we may coin a word—one for cloths and the other for dairy utensils. As the maid stands with her pile of pans or handful of cloths, she places them on the wheel one by one, revolving it to suit her motions. It is a convenient and efficient contrivance, and very easily provided, as any one can get it up without expense.

The Farmer's Friend.—At the trials of Grain-Drills at the Paris Exposition, in which there were over 20 drills entered, including American and European, "The Farmer's Friend" carried off the highest honors in the gold and silver medals. The first prize, a gold medal, was given by the jurors on a field trial, 50 miles from Paris. One part of this field trial was the removal of the "hoes," and tying sacks to the delivery tubes; then driving over a road for about a mile, weighing the grain separately from each tube, and driving back over the same distance and weighing again. The result was a variance of only an ounce and a half. This triumph of the "Farmer's Friend Grain-Drill" in France, will please those who have proved its excellence by actual use here.

Cheap Cisterns.—Plenty of good water is of prime importance everywhere. There can be no better water than that naturally distilled, falling as rain or snow. On the average, at least 300 barrels of it fall upon every building 20 feet square, annually—in some places more, in others less. To catch this from every roof and keep it for use as wanted, is not difficult if one has cisterns enough. *Cheap cisterns* are easily made wherever there is solid ground within 2, 3, 4, or even 5 feet of the surface. Remove the lighter surface earth (*L*), down to that which is compact (*C*.) Dig as many egg-shaped cisterns as are required, 6 to 9 feet in diameter at the top, and 6 to 10 feet deep. Put upon the sides and bottom an inch thick, or so, coating of mortar made of clear sand and any good hydraulic cement, often called "water-lime." At the top of the *solid* earth, cover with any durable timber, heavy plank, or even poles or rails laid across with the ends extending 12 to 18 inches upon the solid ground. Leave a man-hole (*M*) for entering, and for inserting pump-pipe (*P*), or for drawing water with buckets. The entrance of water is through the pipe (*E*). Spread cement over the wood covering. Fill in the earth (*L*), raising it above the level to shed off water. To apply the plaster (*W*), first coat the earth with a *thin* layer of equal parts of sand and cement, mixed soft and apply as soon as mixed, beginning at the bottom. Next apply an inch or more of mortar made of 1 part cement and 3 of sand. If the soil be not very firm, or if it is springy, let this coat be 1½ to 2 inches thick. Finish with a thin coat of equal parts of good sand and cement, and "white-wash" with a brush with a thickish mixture of cement and water with no sand. Put a flat stone (*S*) at the bottom for entering water to fall upon, to prevent wearing the cement. We have earth-wall cisterns like the above, covered with locust poles, that have done good service for over 20 years, with no signs of failure yet, and we know of many others like them.



What Must a Farm Do to Support Itself? asks a subscriber, adding that "he has disputed all summer with another, on that subject."—If our correspondent were a farmer, he would not ask that question of us, but would stop disputing with his neighbor, and show by his work what one farm could do to support itself. It is not by talk, but by work, that such disputes are settled. There is but one answer, viz.: A farm to support itself, must have its receipts at least balance its expenditure, and that without deterioration of the soil, or allowing the buildings and machinery to get out of repair.

Standard of Excellence for Sheep.—"L.," Columbia Co., N. Y. There are no settled or published standards of excellence for sheep. The points which constitute an acceptable standard are all given in "Stewart's Shepherd's Manual," of which a new edition has been recently published by the Orange Judd Co.

To Free Calves from Lice.—"G. B. B.," Long Island, N. Y. When calves are infested with lice, it is difficult to rid them of the vermin. Beside the neck, the brisket, flanks, and under the thighs are favorite places for lice. The calves should be well carded all over with a card dipped in kerosene oil, and well shaken; then thoroughly brush every part of the body, especially where the vermin harbor. Give a tea-spoonful of sulphur daily in the feed, and the skin in harboring places well smeared with a mixture of raw linseed oil and sulphur.

A Spring Show of Milking Stock is in contemplation, and it is proposed to hold it at the American Institute, New York. The exhibition is to be something after the manner of those held in Great Britain, at Birmingham, Glasgow, London, and Tavistock. Dairymen who have had experience at those shows say that New York is as good a location as any of those mentioned, as the City is easily reached by rail and water from all sections of this country and Canada. Such an exhibition ought to call out a numerous attendance, though the long distances—obstacles which English and Scotch farmers do not have to contend with—may prevent it. That the dairy regions of the East at least might gain much from such an exhibition is shown by the success of the exclusive cattle shows of the West.

Various Matters.—There are numerous schemes, which hardly belong in our Humbug columns, yet from the inquiries made by our readers, need a word of notice. For example, in a neighboring city there is advertised

A Piano for $5.—Though satisfied ourselves about the matter, yet in behalf of our readers, we requested a friend in the city where it is sold, to step in and examine it. His report is just such as we could have made without seeing the instrument. The price of the piano is $5—and it is probably worth somewhere about that sum. If any suppose that a piano-maker will sell his goods for much less than it costs to make them, or that a piano worth $300, $100, $50, or even $20, is to be sold for $5, they have very little knowledge of business. ..Here is a Philadelphia concern that offers

"Mammoth Rye, or Diamond Wheat."—This is calculated to confuse. The grain is either a rye or it is not; it is either a wheat, or it is not. It can not be both rye and wheat, nor can it be a rye *or* a wheat. Those who offer it for sale should be able to say what it is and offer it under its own name. We have already described, figured, and given the history of this grain in March last, and have shown that it is a grain that has long been known in Europe as the Polish Wheat, *Triticum Polonicum*, and there is no possible excuse for these Philadelphia people to advertise it as "Mammoth Rye, or Diamond Wheat," unless they wish to "darken counsel." The grain has a varied reputation abroad, and we have reason to suppose that it is one much influenced by soil and climate. But we do not now discuss its value. It has cost us no little trouble and research to find out what the grain really is, and we have a right to insist that Messrs. Haines & Co. shall put it forth under its real name. Gentlemen, if you know anything about grains and seeds, you know that it can not possibly be both wheat and rye....A correspondent in Stark Co., Ill., sends us a sample of

Doct. H's. "Hog Cure," asks our opinion, and "if not too much trouble, to analyze it." We can't give an opinion, as it is a secret compound. The directions tell how to mix it "for hogs" and for "pigs"—and it appears to be assumed, that whatever may be the matter with hog or pig, he is to be dosed with this same stuff "until relieved." It comes under the head of quack medicines.

As to Analyses, we put our chemical apparatus away several years ago, not having the time to make simple examinations, much less analyses. An analysis would cost all the way from $10 to $50, if not more. If a vegetable compound, an analysis would be useless.

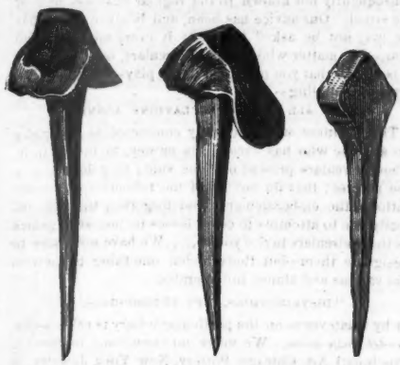
Scratches in a Horse.—"C. F.," Washington, D. C. This disease is not permanently cured by outward applications, as it is the effect of a disorder of the blood. Give half an ounce of hyposulphite of soda, daily, for a week or two, and wash the leg with one dram of carbolic acid in a quart of water. The diseased skin should be dressed twice a day with this, and be kept perfectly clean.

A Durable Fence.—The objection to the common board fence, as usually made, is that the ends of the boards are exposed to the wet, without chance to dry quickly, and soon rot—the more so when a lap-strip is nailed over them. To avoid this, the posts may be cut away, to fit the ends of the boards tightly; the lap-strip then covers the joints securely, and prevents the entrance of water. (See engraving.) If the ends of the boards and the mortises are painted, their durability is much increased. Many fences go to destruction simply from lack of proper care in their construction. If we must build fences, let us construct them so that they will not go to waste, because a little extra labor and cost at the outset happens to be necessary to insure their comparative permanence.

Cattle Exportation.—Since writing the article on page 20, we learn that the British Government has exempted American and Canadian cattle from the provisions of the bill mentioned in the article above referred to, if accompanied by government health certificates; otherwise they will be slaughtered at the landing. Here is a chance for the friends of veterinary medicine to do a great favor to the profession, by inducing the Government to appoint veterinary inspectors to have charge of this certificate business. It is important that the inspection be put in the hands of veterinarians, or there will be

no surety of only healthy animals being shipped. A few diseased animals shipped will endanger the interests of the export trade and reflect alike on shippers and breeders.

Horse-Shoe Nails Abroad.—An observing traveller finds much to interest him in the minor economies of a strange people, and in noticing how differently they do things from the methods he has been accustomed to at home. A friend has presented us with a couple of horse-shoe nails, made in Greece, of the kinds in general use in that country; they are made by hand, and while of the rudest shape, are from the very best Sweedish iron. They were sent to this country to ascer-



tain if some of our nail-making machines could be adapted to turn out a similar product. The left-hand and middle engraving show these Grecian nails, while that at the right-hand represents a nail which the writer brought home many years ago from Mexico, and which, until the Grecian product came to hand, he supposed was as rude as it was possible for a nail to be. In the Mexican shoe there is a square hole with sides beveled, into which the lower part of the head of the nail fits snugly, and a horse shod in their manner is protected against slipping on the smooth rocks which in many portions of that country he is often obliged to travel upon.

Nameless Letters.—"G. W. W.," writes from Washington, D. C., as follows: "Knowing that you receive many important letters without name of town, county, or State, or without signature of the writer, I send statement of this kind of blunders by postmasters, compiled from books of the Post-Office Department. For fiscal year ending June 30, 1878, the number of postmaster's requisitions for postage stamps, etc., returned for signature, 2,704. The number returned for correction, or not stating what was wanted, 1,532. Number of headless requisitions returned (*i. e.*), requisitions without name of office, county, or State, 276. The labor of finding where the headless requisitions originated, and returning to the postmaster signing the same, can not be calculated; but more time was spent in finding where *one* of the careless postmasters lived, than would properly fill all requisitions of this class. This information is given to show the large number of people who do not write their *office, county*, or *State*, at top of letters; or, if headed properly, fail to *sign their name*."—Similar letters await identification here.

The Best Feed-Cutter.—Several letters from various sections of the country asking us to name the "best feed-cutter," and the "best root-cutter." The true and shortest answer would be—There is no best. In the advertising columns of this journal are found mentioned various styles of feed and root-cutters and other implements, each of which is good. Some one may excel in speed, another in quality of work done, another in ease of running, etc., but on the whole, they are about equal to each other. We aim to admit advertisements of only those implements which will give satisfaction to purchasers, and we believe that readers may order of any advertiser in these columns, and in the great majority of cases, they will be fully satisfied with the result.

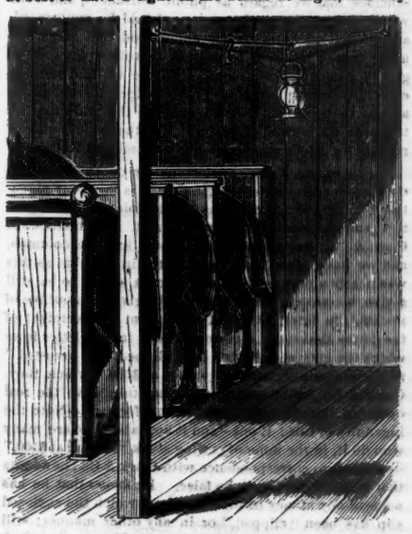
The Dinner Year Book, by Marion Harland, is just issued by Charles Scribner's Sons. The author's earlier "Common Sense in the Household," was so true to its title, that we are favorably disposed, at the outset, towards any book she may present us with. The present is a somewhat more ambitious work than the former, and takes her more into the refinements of providing and cookery. Her plan is, to give a series of bills of fare for seven days of four weeks in each month, leaving the housekeeper who follows the work literally, to her own resources for the odd days not provided for, which will probably lead to "picked-up dinners." It is impossible to know the real value of a work like this, unless one follows its teachings for some time, and we can only say that we are most favorably impressed with what we have seen of it, and have no doubt that it will sustain the author's well-deserved reputation in this useful department of literature. "Common Sense" is not lost sight of, even if the work is illustrated by colored plates of the showy dishes. The Orange Judd Co. have arranged to send it from this office, post-paid, at the publisher's price, $2.25.

Beware of Bee-Wares.—We have had inquiries about, and complaints of, one "Mrs. Cotton," of Maine, who advertises that if bees are managed on her plan, they will "pay a profit of Fifty Dollars" on every hive. While we were making inquiries about "Queen Cotton," the "Gleanings in Bee Culture," a useful journal, edited by A. I. Root, Medina, Ohio, for Nov., came to hand. The gleanings are grouped under headings, and under "Humbugs and Swindles pertaining to Bee Culture," the "Queen" has a prominent place—indeed, she well nigh monopolizes this department. "Fifty Dollars" a hive is a rather handsome return—but then it can only be had by following her "New Principles in Bee-Keeping." We don't like to say that Mrs. C. is a humbug, for it isn't a pleasant thing to say about any woman, and a recent letter relieves us, for one has come to hand from a prominent citizen in the very town where Mrs. Cotton spins her yarn, stating that it is *Mr.* Cotton, after all, who is using his wife's name, "because he thinks it better than to use his own." From all we can learn, these Maine bee-ists are not the best kind of people to "Cotton-to."

Spain's Barrel Churns.—Churns are not quite so numerous as washing machines, but there are so many of them as to admit of division into several classes. Probably next as to numbers, after the upright dasher churns, come the barrel churns, in which a barrel-shaped receptacle holds the cream which is acted upon by revolving dashers. Among churns of this style, Spain's, advertised elsewhere by Clement & Dunbar, takes a deservedly high rank, as the closest attention is paid to every detail; the material of the churn is selected white cedar, put together with galvanized hoops. The dasher, of peculiar construction, can be easily removed and the whole can be thoroughly cleaned. The churn is supported on a convenient stand. Many premiums awarded to this churn show the esteem in which it is held by good judges.

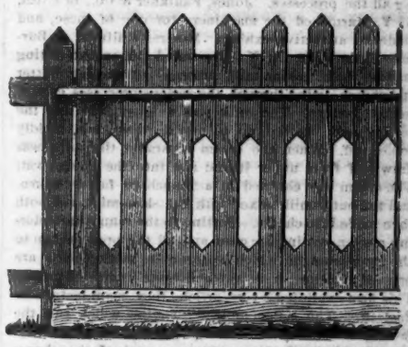
Management of Swine.—"C.," Republic Co., Kansas. The good management of a large herd of swine—100, for instance—requires that, to prevent sickness by contagion, they should be kept from running water that might be infected from above, and from contact otherwise with infected herds; to facilitate fattening they should be kept in pens, with warm, dry sleeping places; to preserve health they should have fresh pure water from wells; to prevent piling up and smothering they should not be herded in large numbers, and for the most profitable breeding the old sows should be kept over, as they are more prolific and better mothers than young sows. It is a fact that the vast destruction of swine by disease in the West could be prevented almost wholly by observing proper sanitary rules. The fatal "hog cholera," so called, is comparatively unknown in the Eastern States, even in the herds numbering several hundreds.

Light in the Stable.—It is a dangerous matter at best to have a light in the stable at night, and any



contrivance to lessen the risk of fire is welcome to the thoughtful farmer. The engraving represents a simple arrangement that has been in use for many years, without accident, in the stable where this sketch was made. A wire is stretched behind the horse-stalls from post to post, clear of the walls, and out of reach of the heads of horses or men. The lantern is hung to a hook suspended from this wire, on which it may be moved along to light up any stall as desired. When the proprietor goes away of an evening with a horse, he does not require the men to await his return, but before retiring to bed, they hang a lantern with the light turned low, on this wire. Then when he comes to put up his horse, the stable is ready lighted for him, all is safe and convenient, and the men's tempers are kept unruffled, by having their evenings to themselves and going to bed when they please.

An Italian Fence.—The engraving represents a style of fence appropriate to the garden or street front, which is very neat and even quite artistic. The sketch was



given us by Mrs. "L. H. V.," of New York, who, we believe, saw the fence in some far away Italian town, though a similar style is not uncommon in parts of this country. The foundation of the fence may be the ordinary post-and-rail frame-work. In each opening between the slats is inserted a secondary slat, quite filling the space from side to side, and extending about a foot below the rail, and half the distance from the rail to the top of the slat above. A "band" lengthwise of the slats opposite the upper rail, and a base-board complete the fence. It costs but little if any more to make a fence—where a fence must be built—that will be an ornament to the grounds, and always pleasing in its effect both upon the owner and the passer-by, than an ill-shapen affair, that pleases no one and is likely to be torn down at any time to give place to something that will be more attractive.

Basket Items continued on page 33.

International Dairy Fair.

The "International Dairy Fair" held in New York the first week in December, was a success as an exhibition of dairy products and financially; in dairy apparatus and machinery and dairy stock, it was only fair. We might offer sundry criticisms, and report some dissentions, some charges of under-hand operations, and favoritism in the awarding of the prizes, etc. But this being the first attempt at an exhibition of this kind on a large scale, in the East, we are disposed to pass by defects, trusting that they will be overcome at the next show. Taken as a whole, it was a grand display, a novel one to many citizens, more of whom ought to have seen it, for their own gratification and instruction. Doubtless the attendance would have been much larger both from city and country, if the managers had had more previous experience with printer's ink—and advertised more freely, instead of leaving the people to learn of what was to be seen by the generosity of the Daily press. All this will be improved another year we trust. Those chiefly in charge of the organization and management did very well. Dairymen would have have been pleased if more of their own number had had a share in the management. A good show of butter and cheese was assured, by the dealers offering to sell at good prices all that was brought to the exhibition. Of the visitors the larger number were city people attracted by curiosity; and many of them here gained their first knowledge of *how* their butter and cheese is manufactured. As this exhibition was the outgrowth of several Western Dairy Fairs, the preponderance of Western butter and cheese was not surprising. Very few of the celebrated fancy-butter dairymen took part in the exhibition, perhaps thinking that the advertising would do them no good, though they might have been generous enough to show other people something of their methods and products. It is hoped that this exhibition will lead to a still better one, and a larger attendance of farmers and dairymen next year.

The "miscellaneous" list of exhibits comprised general farm implements, fertilizers, and notions, that properly have no place in a "dairy fair," but they helped to occupy the surplus room and amuse the rural people.

The Fair was hardly "International," as the "foreign"

cheese was mostly of American make, except a very interesting collection contributed by Messrs. H. K. & F. B. Thurber, of New York, and a few samples sent over by a London dealer; we observed no foreign dairy implements.

The arrangement of the exhibits was excellent. A great pyramid of cheese stood on each side of the hall; one of them forming a portion of the exhibit of H. K. & F. B. Thurber is illustrated on our first page. Samples of hermetically sealed butter, of which the U. S. Army last year bought 20,000 packages, were also exhibited by this firm. The other pyramid contained ten tons of Western and Vermont cheese, that from Vermont taking the first prize over all American brands. Two cheese factories and creameries were in full operation, illustrating all the processes. Jones, Faulkner & Co., of Utica, N. Y., furnished the machinery for one of these, and made an attractive exhibit. Messrs. Whitman & Burrell, Little Falls, N. Y., illustrated in an interesting manner their "skim milk process" of making butter and cheese, going through the various processes as at a regular factory. The milk was weighed, run into the setting tank, heated up to 140 degrees, then rapidly cooled off. When the cream separated, the milk was drawn off from under it and run into the cheese vat. The cream was churned in a Blanchard factory churn, and the buttermilk mixed with the skim-milk, and both then made into cheese. Putting in the rennet and coloring matter, cutting the curd, and all the processes on to the gang press, in which a dozen or more cheese are pressed at a time, were watched by an interested crowd. This firm exhibited every article they manufacture or deal in. The "Economizer" engine which run the factory machinery is worthily gaining in popularity. As an example of the enormous extent of the cheese manufacture in this country, Messrs. Whitman & Burrell sold in 1878 about 500,000 rennets, each of which is sufficient for 350 to 400 lbs. of cheese.

City people unfamiliar with the way in which those necessary articles, butter and cheese, are made, watched with interest the processes of manufacture, and will butter their bread and eat their cheese with more than a gustatory interest hereafter, and we hope will eat more of both. Farmers with their wives, sons and daughters, examined interestedly the various appliances, which, with the view of the great extent of the industry that the exhibition gave, will enhance their ideas of their calling, and we hope teach them to reap larger profits from their work by use of improved methods and apparatus.

A new oscillating churn, the "Davis," was shown in operation by the Vermont Farm Machine Co. It is made of wood, and is thus free from the objection of butter sticking to its sides, and from the method of hanging it in a horse-like frame, it is easy to operate. A prominent dairyman remarked that the butter he took from this churn was as well made as any he ever saw from any churn. This concern also showed the Cooley Creamer, well known to our readers, and a new butter worker that works all the butter, and has no grooves or slots in which the butter can lodge. It is claimed that the objection once made against the Cooley Creamer that the butter made from it would not keep, is now overcome by letting the milk stand 12 to 24 hours exposed to the air in order to let it ripen before churning.

The butter worker of A. H. Reid, Philadelphia, was exhibited in operation. This machine is held in high esteem by many good dairymen.

Forty-five tons of Ashton's F. F. Salt in one pile made a conspicuous object near the center of the hall. This was the special exhibit of F. D. Moulton & Co., who are the agents here for this celebrated brand of salt. H. K. & F. B. Thurber made a large exhibit of Higgins' Salt, for which they are agents, and for which they claim superiority. There is a lively competition between these two brands.

Wells, Richardson & Co., Burlington, Vt., exhited their Perfected Butter Color. Samples of butter were shown by them from A. W. Cheever, of Mass., colored with this material. This butter sells for 35 cents per pound in Boston. He makes no secret of using it, and considers it an excellent article. W. R. & Co. offered $25 premium for the best butter colored with their article.

The butter coloring of Mrs. B. Smith, Philadelphia, occupied a table. It is claimed that this article has less odor than any other, and it is endorsed by good dairymen.

Chas. Hansen's Laboratory exhibited "liquid rennet extract," and cheese and butter coloring. These preparations, originating in Denmark, are endorsed by L. B Arnold and other dairy authorities here and abroad.

The Dairy Supply Co., N. Y., made a creditable display of their Pendulum Churn, the "Perfect Milk Pail," and other dairy appliances. Among other well known dairy apparatus were the "Lily Butter Worker," "Bullard's Oscillating Churn," and "Blanchard's Churn," etc.

In the cattle pens were some choice animals from the herds of S. M. & D. Wells, Wethersfield, Ct., 3 Ayrshires; Wm. Crozier, Northport, L. I.; Wm. Taber, Patterson, N. Y., 2 Red Polled Norfolks; and Devons, Durhams, and Dutch stock from various sources. Mr. Crozier showed 7 Ayrshire cows and a very fine bull, 8 Jersey cows, and a bull, and one Guernsey cow.

The display of butter and cheese was large and excellent; that from the West especially made a fine showing, comprising a large proportion of the whole. It enforced the fact of the immense resources of the West, and particularly when it is remembered that the dairying of that region is little more than beginning its development.

Sundry Humbugs.

As a matter of course, many New Readers begin with the new year, and it seems necessary to say a word to these on the Humbug Column, and the manner in which it is conducted. Many years ago, when Mr. Judd was sole proprietor and Editor of the *American Agriculturist*, he found at conspicuous points and in the business parts of the city various mock-auction shops and other traps set especially to catch those countrymen who visited the city on business or pleasure. The swindling games were carried on openly, and if not in defiance of, at least without molestation from the then inefficient police. So many cases of fraud came to his knowledge, and in so many instances did the victims who were farmers appeal to him for redress, that he began to warn people against such shops, and to expose their methods. This naturally led to the exposure of other frauds, especially those directed towards farmers, and long before any other paper gave any attention to such matters, its Humbug Column became a feature of the *American Agriculturist*. So much for the origin. As to the present and future we propose to expose here and warn people in general, but especially farmers and those who live in rural communities, against

ALL FRAUDULENT SCHEMES,

no matter how cunningly conceived, or how plausible they may appear in their presentation. This is not a pleasant task, as it brings us to the knowledge of the worst phases of human nature, and only the conviction that our work is necessary and useful, induces us to continue in it. It is not our own estimate, but the freely expressed opinions of others, that the labors of the *American Agriculturist* in this direction have saved the country

MANY MILLIONS OF DOLLARS

by its timely warnings against and exposures of frauds. We have similar acknowledgments frequently by mail, and as they are made to us personally whenever we travel, we are encouraged to continue in the course. It is a very common thing, to receive a letter with a brief, one-sided statement, asking us to show up so and so as a fraud. Such letters are not noticed; we only expose those schemes that we regard as public nuisances, and evils which the public good requires should be suppressed, and wish it to be distinctly understood that these columns cannot be used to redress private wrongs, or to gratify personal resentment.....While we find nothing especially fresh in our New-Year's budget, the old affairs appear to be brisk, and we suppose that this may be taken as a "revival of trade." For the benefit of new readers we briefly enumerate a few prominent features.

"CLARK & CO., ADJUSTERS OF CLAIMS,"

continue to send letters beginning, "Is this your signature?" The letter contains the recipient's real signature, cut from some letter or document. The methods of Clark & Co. have already been shown in these columns, and we have given their letters, etc., in full; but as this was nearly a year ago, and the concern seems to be still active, we answer many inquiries by giving an outline of the affair in brief. Clark & Co. inform the recipient of the letter that "the money you sent in the letter from which the enclosed slip has been clipped, was invested" in certain mining stock, "valued at $500," which they, Clark & Co., will, on learning that they have the real owner of the signature, receive and forward.—Note the ingenuity of this: If one—and it appears there are many who do it, in the hope of getting stock "valued at $500," —enters into correspondence with Clark & Co., he admits that which he knows to be false. He *knows* that he has *not* sent any money in the letter from which the enclosed slip has been "clipped," or in any other manner; still the temptation is too much for some. If one writes C. & Co., they inform them that the "charge for adjusting" is $5, which he is requested to remit. If he does this and receives the "stock," he will have paid $5 for a very useful lesson; though his stock be worth nothing. He was, in the hope of gain, willing to admit, and thus by implication subscribe to that which he knew to be false, and has paid $5 for an apparently much needed example of the truth that

"HONESTY IS THE BEST POLICY."

There is nothing on which we have more inquiries than on *stock speculations*. The country is flooded with circulars of parties hailing from Wall Street, each claiming to have special facilities for doing business, and showing that a small investment is nearly sure to yield a large return. The schemes are plausible, but ready money is cautious, and scores write us, asking about the parties and for advice. In the several inquiries we have made we have found that none of the parties sending the circulars were members of the Board of Brokers, and were consequently not known to the regular business men of the street. Our advice has been, and is given now, that we may not be asked to repeat it every month in the year,—No matter who send the circulars, or how plainly it is shown that you must win if you play—for it is only a form of gambling—

"LET ALL STOCK SPECULATIONS ALONE."

The business, when honestly conducted, is too risky for any one who has *earned* his money, to invest in it. These circulars present but one side; they do not give the reverse; they do not tell of the robberies, the defalcations, the embezzlements and forgeries, that are directly due to attempts to cover losses in just such games as these circulars invite you to.....We have not space to designate them—but there is but one thing to do with the various and almost innumerable

"DISTRIBUTIONS, GIFT ENTERPRISES,"

or by whatever name the particular lottery is called—that is—*let them alone*. We make no exceptions in favor of Cincinnati Art, Chicago Pottery, New York Jewelry, or Town lots in Western cities, no matter if Mayors, Bank Presidents, Generals or Justices support the thing. An honestly drawn lottery is a wrong, and very, very few are honestly conducted. The ticket buyers pay their full proportion of a sum, the half or more of which is taken out of the "pool" for somebody, or something else, and so, at best, they pay a full dollar for a *chance* at half a dollar. The chances of getting anything are too small to ever warrant the trial. The human mind is so constructed, so to speak, that it is positively dangerous for one to make the first investment in a lottery ticket; it is a step on a downward road that few ever retrace....The miner who, in the early days of California, turned highwayman, and gave it as an excuse that "he preferred to mine his gold already coined," should have lived in the days of

"THE CHEYENNE MINING CO.,"

when even buying the stock, gives one a kind of gold—"Imitation Gold"—already made into a watch. The "shares" are only $5 each, and whoever buys two, can have an "Imitation Gold Watch;" whoever invests in three shares, can have an "Imitation Enameled Gold Watch," and so up along. This is mining as is mining ....It gives us grief to state that

JONES HAS NOT FOUND HIS COUSIN.

Poor Henry P. is rampaging, by letter, all over the country after those cousins of his. Jones is the most be-cousined person we ever heard of, and every month shows that he has lost—or, at least, can't find—numerous cousins with numerous names. We gave an account of Jones' bereavement a while ago. Jones sends letters—very nice specimens of lithography they are too—informing that he saw the name of the one receiving the letter, in the "U. S. Directory"—Jones had a cousin "bearing the same name," who at the end of the war left his regiment, etc. "If you are my cousin," Jones pathetically says, "I can do you a favor and you can help me." Jones will send his cousin a ticket that will surely draw a prize in a lottery, and the cousin has only to show the prize and sell tickets. In short, act as "stool pigeon" for Jones' lottery, in which Jones can "so arrange it that you (the cousin), will draw a prize"—who wouldn't be Jones' cousin? He has 'em in Pa., Md., Mass., N. J., R. I., and we don't know how many more States—indeed so many that he doesn't always remember the names. One would suppose that even with so many cousins, if one had the unusual name of Peffard, Jones could recollect it—but he goes and calls him "Pippard." We can only account for this by the great grief that must overwhelm him in losing so much cousin. We give Jones credit *for* having one name right. He doesn't write it Smyth, Smithe, nor Sammith—but just straight ahead Smith. We have no doubt he will find this cousin....A concern is sending out its circulars of

GOLD PLATE JEWELRY,

claiming to have its manufactory at "Cortlandt, on the Hudson, N. Y." There is no such factory at that place ... We have often cautioned, and at the beginning of the year repeat the caution, against

CHEAP ILLUMINATING OILS,

no matter by what name they may be called. Chaps are all over the country selling recipes for making cheap oils for burning. They pretend to show that the liquids are safe, by the fact that they extinguish a burning match.

The *liquids* do not explode, but the *vapor* from them, mixed with air, does—they are all dangerous—and especially so is one called the "Celebrated Centennial Illuminating Oil," which claims to cost only eight cents per gallon. The light petroleum oils, called gasoline, naphtha, benzine, etc., are the only cheap inflammable liquids that can be had at a low price. Whoever knowingly introduces either of these into his house for illuminating purposes is guilty of

AN ATTEMPT AT MANSLAUGHTER.

This Centennial Oil, hailing from Marshall, Mich., is a special fraud, as it publishes a certificate as to the excellence of its murderous stuff, from a Professor in the "New York University of Chemistry." As there is no such "University" in New York, our opinion of Sherman & Co., who publish the certificate, need not be expressed.... One of our friends writes in great indignation, that from a certain variety shop in Rockland, Mass., circulars should be

SENT TO HIS LITTLE BOYS.

We have examined this circular, and do not wonder that our friend is indignant that such stuff should be placed in the hands of his children. While we do not find anything actually obscene, and indictable under the law, we do find much that is undesirable, repugnant to good taste, and even coarse and vulgar. The first page contains illustrations of "Fun, Flirtation, and Acquaintance Cards"—all coarse and of exceedingly low tone—such cards as no well-bred youth could by any possibility use. The next page offers books, among them, one entitled, "Love-Making Secrets," offering to teach impossibilities. The next page, among other books, offers a "Fortune Teller and Dream Book," which in "promising" certain rules for foretelling what is going to happen," is simply a fraud. The offer of "Marked Playing Cards," such as "gamblers use to cheat with," of "French Transparent Playing Cards," of "Fac-similies of U. S. Greenbacks," of a book that tells "How to Make $10 a Day Without Capital," or one entitled "Widows' Traps and Maidens' Tricks," with a most vulgar and slangy description, is certainly not such stuff as any parent would willingly have his children read. So long as this Rockland concern, and many others like it, keep within the law, the only thing that parents can do is to so have the confidence of their children, that they will keep nothing of this kind from their parents' knowledge, and to always *know* what their children receive through the mails....The only scheme especially designed to entrap farmers, that occurs in this month's budget, is

PROF. A. D. FRITZ'S FERTILIZER.

This Fritz is of Illinois, and he proposes to sell for $10, the art of making his "Land Fertilizer," and he binds those who buy the secret not to divulge it, or in case they do reveal the secret, to pay him, Fritz, $500. We are totally and all the time opposed to all secrets in agriculture, but a secret may exist and may be sold, and yet be useful. Fritz publishes three closely printed letter pages and gives very little information. His style is not of the clearest. He says: "As the fertility of the soil in the older States lose their virgin freshness much sooner than our Western Prairies, it becomes more necessary to strictly attend to its fertilization." We are not disposed to argue the point, but simply say, "jess so, it do." Fritz claims that "I can so fertilize any land of any kind of soil at a nominal cost of 25 cents per acre, independent of the labor of applying it," * * * "that it will produce a heavier crop than the same land would from its first or second year of cultivation." It is a very wonderful fertilizer, that of Fritz. "Rain or drouth does not materially affect it. It absorbs moisture from the dryest soil." We wonder if it wouldn't be a good thing to put into a well in a dry time and the water failed? But when he says that after its application: "No insect will disturb the Stalk or Blossom, and the Kernel will plumply Fill,"—we conclude that his manure will be bad for the honey interests of the country, as we want the bees to "disturb" the "blossom"—and for this and for various *other* reasons we do not advise farmers to invest in Fritz's secret.

MEDICAL MATTERS

are unusually quiet. It is true that the blooming face of *Lucupia* greets us, and we are invited to read the old old stories of Doctor Bludgood and how he discovered his Life Syrup, and that most touching account with pictures to match, wherein White gives us "The Stealthy Approach of Disease, illustrated, showing how it's deadly grasp is fastened on our vitals." But these are antiquated. The only medical novelty that comes to us is a very well lithographed letter from one Thomas Holloway, London, England, which he is proprietor of

HOLLOWAY'S PILLS AND OINTMENT.

Thomas sends us his picture, and we should say that he employs a hair-dresser who is an artist in his line. He also sends us pictures of Chinese and Turks, Indians and Africans, and we are informed that these enlightened people take his pills inwardly and his ointment outwardly

Thomas informs us that he expended in 1877, £40,000 in advertising his medicines "in every available manner throughout the Globe"—and yet Thomas is not happy. There is a "fly" even in Holloway's "ointment." Thomas wishes to invite our attention to a gross fraud—Mr. Somebody is using his name in making and selling

"SPURIOUS HOLLOWAY'S PILLS AND OINTMENT."

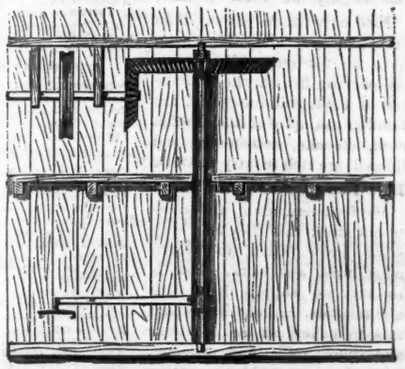
Thomas Holloway says: "Should you condescend to notice this subject in your paper you would confer a lasting obligation upon me." Thomas we condescend. We advise our readers that there are "spurious Holloway's Pills and Ointment" offered for sale. We can't foresee what disasters may result from taking in or rubbing on anything that may be spurious—but we advise our friends to beware. The only way we can suggest that will enable them to avoid the spurious, is to thoroughly abstain, now and always, from taking or using

EVERY PILL OR OINTMENT

that may be called Holloway's, or in fact, every other *secret* pill, ointment, or other remedy, whatever its name.

A Horse-Power for Barns.

A home-made horse-power that will occupy but little space, is represented in the engraving. The upright shaft extends from the ground or lower floor up through the second floor, to a girth set to receive it. On top of the shaft is a bevelled cog-wheel, which is geared to a smaller one on a horizontal shaft, carrying a large pulley, as indicated. The horse is attached to a long arm affixed to the shaft in the room below. By this arrangement all the space on the upper floor may be utilized for machinery, which is very desirable if one is crowded for room; the horse is out of the way and can work in quiet, and the whole is compact and convenient, and furnishes a high power with little friction.



HORSE-POWER FOR BARNS.

Talks on Farm Crops.—No. 23.

By the Author of "Walks and Talks on the Farm," "Harris on the Pig," etc.

A large farmer in Michigan writes that he has 20 acres of clover which it will not pay to mow. He wants to put it in wheat next fall, and asks "how would it do to drill in corn for fodder previously. Can it be cut with a reaper and *cured* in time to sow wheat?"—I wrote him, "no." Corn-fodder can be cut with a reaper, better and far cheaper than by hand. But it can not be cured and *removed from the land* in time for wheat. Some time ago I made a few stacks of corn-fodder to see how it would keep, and we are now feeding it. I can not recommend the plan. We never had a drier and hotter or better time to cure corn-fodder than the past fall. The fodder was cut with a reaper and made into sheaves like wheat, and stuck up in small stooks to cure. Nicer fodder I never saw. It was as dry as we can ever hope to get it. Two or three acres of it was on low land, and we drew off the fodder and put it in six or seven stacks. It was in prime order. But it *heated* more or less in the stacks. The cows eat it with avidity, preferring it to hay, but the sheep do not like it as well as hay, while the corn-fodder that is now standing in large stooks in the field is highly relished by the sheep. I conclude, therefore, that the only way to preserve corn-fodder is to make it into large well-shaped stooks in the field where it grew, and draw it in as wanted during the winter. Or rather, draw in enough at a time during favorable weather to last a week or ten days.

"Why don't you recommend your correspondent in Michigan," asked the Doctor, "to sow oats and peas. You had a great crop on just such land."—I have written him to that effect. If his land is rich enough, and is well drained, so that he can sow early, the probabilities are that he will get a great crop. The oats and peas can be cut with a reaper, and after thrashing a good fanning mill will take out nearly all the oats. If well cured, the pea and oat straw is nearly as good as hay, and sheep do wonderfully well on it—especially if the crop is cut rather green and is not thrashed very clean.

Mr. Henry Clayton, of York, Pa., writes: "I have read your 'Talks on Manures' with care and profit. But some of your conclusions do not seem to agree with my observations.—A field was planted with corn on sod, two years ago. Last summer it was bare-fallowed—plowed three times and covered with barn-yard manure. The last of September it was sown with wheat. Previous to the seeding, a considerable pile of brush, the trimmings of an orchard, was burnt on about a square rod. This rod of land, where the brush-pile stood, has now (Nov. 23d) standing on it, wheat enough to hide a rabbit. It has four times as many blades and twice as strong as on any other rod. The field will produce in a good season, 35 bushels of wheat per acre. Phosphates and potash salts have been applied to land precisely similar, without any visible effect. Now, you say on page 215 of your book, that 'Lawes' and Gilbert's experiments seem to prove that if you have a piece of land prepared for wheat, which will produce, without manure, say 15 bushels of wheat per acre, there is no way of making that land produce 30 bushels, without directly or indirectly furnishing the soil with a liberal supply of available nitrogen.' Was there any nitrogen in the ashes of the brush? If not, what made the great growth of wheat?"

"Good," said the Deacon, "he has you on the hip. There is not a particle of nitrogen in the ashes, and I have myself repeatedly seen similar effects."

"And so we all have," replied I, "but the fact does not disprove the truth of my proposition. The ashes do not contain nitrogen, but the *soil does*, and the manure which Mr. Clayton applied, contained nitrogen. But the nitrogen in the soil and the nitrogen in the manure is largely in an *unavailable* condition. Summer-fallowing and cultivation of any kind, by exposing the organic matter in the soil to the decomposing action of the atmosphere, renders a portion of this nitrogen available. Lime does the same thing; and ashes, when applied largely, also favor the decomposition of the organic matter of the soil, and of the manure, and renders the nitrogen available. And it was in reference to this and similar effects, that I said there was no way of raising the yield of wheat from 15 bushels up to 30 bushels per acre, that does not directly or *indirectly* furnish the soil with a liberal supply of available nitrogen. This is certainly true, as a general agricultural fact. The exceptions to it are rare, and it is not necessary to discuss them. I was anxious to make this matter clear."

We can get nitrogen in barn-yard manure far cheaper than in artificial or commercial manures. But as I have said, the nitrogen in common farm-yard manure is largely in an undecomposed condition. This is especially true of *poor* manure made from straw, or stalks, or hay. Manure from grain, oil-cake, etc., is not only richer in nitrogen, but the nitrogen is more available. There are two things which farmers must aim at. First, we must make richer manure by feeding richer food. Second, we must try to make the nitrogen in our manure as available as possible. As a rule we do not get half the benefit from our manure that its chemical composition would lead us to expect—often not a quarter of the benefit. The nitrogen is there, but the plants cannot get hold of it. It lies dormant in the soil. And one way to remedy this trouble is to ferment the manure thoroughly before applying it to the land. Now is the time to attend to this matter. We commence to pile our manure to-day.

"You have had little heaps," remarked the Doctor, "in the yard for several weeks." — "Yes," said I, "we have been very busy, and have had little time to fuss over manure. We threw the manure up into little heaps where most convenient. But now that winter is fairly set in and we have more leisure, we will make one large central heap. We draw all the small heaps and all the manure and refuse we can find to this central spot to form the basis of the prepared heap. Make the heap six or eight feet wide and four or five feet high. It will soon commence to ferment. Then, every day, as the stables, etc., are cleaned out, wheel the manure on to the top of the heap and spread it. If properly attended to it will ferment all winter. There need be no loss of ammonia. The more I can ferment my manure in winter the better I like it. It puts it into admirable condition for use on spring crops. The fermentation of the manure renders it more available.

A gentleman in Massachusetts wants me to tell him all about barley—the average yield per acre, best variety, time of sowing, and what manures to use. Twenty-five bushels per acre is perhaps a fair average crop; it varies from 10 bushels to 60 bushels per acre. The four or six-rowed barley is the most profitable. Sow as early in the spring as the land can be got into good mellow condition—the earlier the better. Drill in 2 to 2½ bushels per acre. I usually sow 2½ bushels, but many sow only 2 bushels or 1¾ bushel. Much depends on the land. It will pay wonderfully well to use artificial manure on barley at present prices. The manures are cheap and barley is high. 100 lbs. of barley brings far more than 100 lbs. of the best wheat. With good land and artificial manures, we can grow 50 bushels of barley as easily as we can 30 bushels of wheat.

Science Applied to Farming. — XLVIII.

Composition and Values of Fodder Materials.

In the earlier of this series of articles, in connection with some explanations of the advanced principles of feeding as taught by the remarkable experiments lately made in the European Stations, I gave several tables showing the composition of fodder materials and feeding rations, calculated to secure the most economical employment of the food. The interest manifested in the subject in newspaper discussions and in scores of letters from all parts of the country; the success many have had in putting the principles then advocated in practice; the advance in the science, and finally the numerous analyses of American feeding stuffs, until of late almost entirely lacking, lead me to take up the subject again, and give some figures for the composition, digestibility, and value of the materials most used for fodder. The table is from a much more extensive one, prepared with accounts of analyses and fodder rations for the forthcoming Report of the Experiment Station at Middletown, Ct.

Food Ingredients. Chemical Terms Explained.

Water.—If a piece of wood or wisp of hay be dried some time in a hot oven, more or less water will be driven off. The water in feeding-stuffs varies from 80 or 90 lbs. in every 100 lbs. of young grass or fodder-corn, to only 8 or 10 lbs. to the 100 in dry straw or hay.

Organic Substance.—If the dried wood or hay be burned, most of it will pass off as gas, vapor, or smoke. The part thus burned away is the Organic substance. The residue,

The Ash contains the mineral matters—that is, potash, lime, phosphoric acid, etc., of the plant. The most important part for our present purpose, is the organic, the combustible matter. This consists of three kinds of ingredients: albuminoids, carbohydrates, and fats. The main point in economical feeding is to secure the right proportions of these at the lowest cost.

Albuminoids; also called protein compounds, proteids and flesh-formers, contain carbon, oxygen, hydrogen and nitrogen. They thus differ from the carbohydrates and fats which contain no nitrogen. The name albuminoids comes from albumen, which we know very well as the white of eggs, and it is found in milk. The fibrin of blood and muscle (lean meat), and the casein (curd) of milk, are also albuminoids. Indeed, the solid parts of blood, nerves, lean meat, gristle, skin, etc., consist chiefly of albuminoids. In plants they are equally important. Plant albumen occurs in nearly all vegetable juices, especially in potatoes and wheat, casein or legumin in beans and peas, and fibrin in the gluten of wheat, the basis of what farmer-boys call "wheat gum." Clover, bran, beans, peas, oil-cake, and flesh and meat scrap, are rich in albuminoids.

Carbohydrates consist of carbon and hydrogen. The most important are starch, sugar, and cellulose (woody fibre). They make up a larger part of the solids of plants, but only a little of them is stored in the animal body. Potatoes, wheat, poor hay, straw, and corn-stalks consist largely of carbohydrates.

Fats have more carbon than carbohydrates, and, like them, have no nitrogen. Fat meat, tallow, lard, fish oil, the fat (butter) of milk, and linseed oil are familiar examples of fats. Indian corn, oil-cake, cotton-seed and linseed, are rich in fatty matters.

How Food is used in the Body.

We feed hay, grain, and roots to our stock that they may keep warm, grow, fatten, and return meat, milk, and work. That is to say, we supply them with albuminoids, carbohydrates, and fats, to make flesh and fat, bone and sinew, milk, and progeny, and to be consumed in generating heat and muscular strength. The animal body is often compared to a machine. This machine is peculiar, in that it is made of food, consumes its own materials for fuel, uses food for both fuel and repairs, and keeps running, wearing out, and warming, and repairing itself by use of food all the while, whether it does any other work or not.

Average Composition, Digestibility, and Money-Value of Fodder Materials, according to Wolff's Tables for Germany, 1879. (American Products in Italics.)

FEEDING STUFFS.	Water.	Ash.	Organic Substance. Total. Albuminoids.	Woody fiber.	Carbohydrates.	Fats.	Organic Substance Digestible. Albuminoids.	Carbohydrates.	Fats.	Nutritive ratio.	Money value. Dollars per 100 pounds.	Comparison with meadow hay—1.
	per ct.	per ct.	per ct.	per ct.	per ct.	per ct.	per ct.	per ct.	per ct.	1:	$ cts.	
GREEN FODDER.												
Rich pasture grass	79.2	2.2	4.5	4.0	10.1	1.0	3.4	10.9	0.6	3.6	0.27	0.49
Red Clover ready to blossom	83.0	1.5	3.3	4.5	7.0	0.7	2.3	7.4	0.5	3.8	0.19	0.29
Red Clover in full blossom	80.4	1.3	3.0	5.8	8.9	0.6	1.7	8.7	0.4	5.7	0.17	0.26
Fodder-corn	85.0	1.0	1.2	4.7	7.6	0.5	0.7	7.4	0.2	11.3	0.10	0.16
Fodder-corn, So. white, old	86.0	0.8	0.8	4.8	7.3	0.3	0.6	8.3	0.2	14.4	0.09	0.14
Fodder-corn, do. younger	86.0	1.1	1.3	4.6	7.1	0.3	0.9	7.6	0.1	9.2	0.11	0.17
Fodder-rye	76.0	1.6	3.3	7.9	10.4	0.8	1.9	11 0	0.4	6 3	0.19	0.31
Hungarian grass, in blossom	75.0	1.3	3.1	8.5	10.9	0.7	1.8	11.8	0.3	7.0	0.19	0.30
HAY, STRAW, ETC.												
Meadow-hay, inferior	14.3	5.0	7.5	33.5	38.2	1.5	3.4	34.9	0.5	10.6	0.48	0.74
Meadow-hay, average	14.3	6.2	9.7	26.3	41.4	2.5	5.4	41.0	1.0	8.0	0.61	1.00
Meadow-hay, extra	16.0	7.7	13.5	19.3	40.4	3.0	9.2	42.8	1.5	5.1	0.84	1.32
Timothy-hay, average	14.3	4.5	9.7	22.7	45.8	3.0	5.8	48.4	1.4	8.1	0.69	1.09
Timothy-hay, ready to blossom	12.5	4.1	8.4	28.9	44.4	1.7	4.4	42.6	0.8	10.5	0.61	0.96
Timothy-hay, in full blossom	12.5	3.8	6.2	29.1	47.1	1.2	3.1	42.0	0.4	13.2	0.56	0.89
Timothy-hay, nearly ripe	12.5	3.2	5.5	31.0	46.4	1.4	2.7	40.6	0.4	15.7	0.50	0.79
Clover-hay, inferior	15.0	5.1	11.1	28.9	47.7	2.1	5.7	37.9	1.0	7.1	0.58	0.91
Clover-hay, average	16.0	5.3	12.3	26.0	38.2	2.2	7.0	38.1	1.2	5.9	0.69	1.08
Clover-hay, best	16.5	7.0	15.3	22.2	35.8	3.2	0.7	37.6	2.1	4.0	0.88	1.39
Clover-hay, ready to blossom	14.3	7.3	12.2	23.8	41.0	1.5	6.7	38.8	0.8	6.1	0.68	1.06
Clover-hay in full blossom	14.3	6.6	11.6	23.8	42.0	1.8	5.9	39.7	0.8	6.9	0.64	1.00
Clover-hay, nearly ripe	14.3	5.6	8.9	27.2	42.6	1.5	4.0	39.6	0.6	10.3	0.56	0.89
Hungarian, early in blossom	16.7	7.2	10.7	28.9	34.8	1.7	6.0	38.4	0.7	6.7	0.63	0.98
Hungarian in full blossom	16.7	4.8	8.0	27.6	41.9	1.5	4.0	36.7	0.5	9.4	0.52	0 81
Corn-fodder, So. white, young	25.0	5.5	6.9	24.3	37.3	1.0	4.5	40.0	0.5	9.2	0.58	0.91
Corn-fodder, So. white, older	25.0	4.3	4 5	25.7	39.1	1.4	2.7	38.9	0.5	14.9	0.49	0.76
Wheat-straw	14.3	4.6	3.0	40 0	36.9	1.2	0.8	35.6	0.4	45.8	0.36	0.57
Rye-straw	14.3	4.1	3.0	44.0	33.3	1.3	0.8	36.5	0.4	46.9	0.35	0.55
Oat straw	14.3	4.0	4.0	39.5	36.2	2.0	1.4	40.1	0.7	29.9	0.44	0.69
Corn-stalks	15.0	4.2	3.0	40.0	36.7	1.0	1.1	37.0	0.8	34.4	0.39	0.62
Corn-cobs	11.5	1.5	1.4	43.2	53.8	0.1	?	?	?	?	?	?
TUBERS AND ROOTS.												
Potatoes	75.0	0.9	2.1	1.1	20.7	0.2	2.1	21.8	0.2	10.6	0.29	0.46
Mangolds	88.0	0.8	1.1	0.9	9.1	0.1	1.1	10.0	0.1	9.3	0.14	0.22
Rutabagas	87.0	1.0	1.3	1.1	9.5	0.1	1.3	10.6	0.1	8.3	0.15	0.24
Sugar beets	81.5	0.7	1.0	1.3	15.4	0.1	1.0	16.7	0.1	17.0	0.19	0.30
Turnips	92.0	0.7	1.1	0.8	5.3	0.1	1.1	6.1	0.1	5.8	0.10	0.16
GRAINS, MILLING PRODUCTS, &c												
Corn, N. E. yellow, 8-rowed	12.7	1.4	10.0	1 7	75.0	3.9	8.4	66.8	2.8	8.8	1.04	1.62
Corn, Western	13.0	1.2	8.9	2.0	71.6	3.3	7.5	67.9	2.5	9.9	9.7	1.51
Corn, Southern white	12.7	1.4	9.7	1.8	71.2	3.2	8.2	67.6	2.4	9.1	1.04	1.62
Corn, sweet	10.8	2.1	11.4	3.8	64.3	7.7	9.6	16.8	5.9	8.0	1.19	1.86
Oats	14.3	2.7	12.0	9.3	55.7	6.0	9.0	43.3	4.7	6.1	0.98	1.53
Oats, No. 1 white	11.2	2.9	11.5	12.2	52.8	5.1	8.7	43.3	4.0	6.2	0.94	1.47
Barley-feed	9.98	3.8	12.7	7.0	63.5	3.2	10.1	57.1	2.1	6.2	1.05	1.64
Rice-feed	15.1	6.0	9.3	8.1	59.8	1.6	7.3	49.1	1.4	7.3	0.82	1.28
Wheat bran (shorts)	11.4	5.1	12.9	8.1	59.1	3.5	10.0	48.5	3.1	5.6	1.01	1.58
Middlings	11.8	2.3	11.4	4.8	66.8	2.9	8.9	54.8	2.6	6.9	1.00	1.56
Malt-sprouts	11.6	6.7	25.9	9.3	45.5	1.1	20.8	43.7	0.9	2.2	1.33	2.08
Cotton-seed meal, decorticat'd	11.2	7.6	38.8	9.2	19.5	13.7	31.0	18.3	12.3	1.6	2.05	3.22
Linseed-cake	12.2	8.8	29.5	9.7	29.9	9.9	24.8	27.5	8.9	2.0	1.71	2.70
Dried blood	12.0	4.1	80 8	....	2.6	0.5	54.1	2.6	0.5	....	2.39	3.76
Meat-scraps	11.5	3.7	72.8	....	....	12.0	69.2	....	11.2	0.4	3.52	5.47
Fish-scrap, Goodale's process	11.5	...	64.0	....	....	4.6	57.6	....	4.1	0.2	2.67	4.17
Fish-scrap, dry, ground	11.7	...	51.5	....	....	8.1	46.4	....	6.2	0.3	2.28	3.56

[*This important table, based on averages of more than one thousand accurate feeding experiments, should be kept for reference. The first six columns give the number of pounds of ingredients in 100 lbs.; the 7th, 8th and 9th columns the amounts digestible, and hence nutritious; the 10th column the proportion of others to albuminoids; the 11th column the money value per 100 lbs.; the last column the value compared with good meadow hay (English grasses) as the standard.*—ED.]

Meat, Milk, Warmth, and Strength from Albuminoids, Carbohydrates, and Fats.

The lean-meat (muscle), the casein (curd) of milk, and the albuminoids of the body generally, are made from the albuminoids of the food. A large part of the fat of the body and of the milk (butter) is made and must be made from albuminoids also. The fats of the food are stored in the body and find their way into the milk. It is probable that the carbohydrates can be transformed into fats in herbivorous animals and in swine, but it is very doubtful whether horses, cattle, and sheep get much fat from them. Part of the sugar of the milk comes from the sugar, starch, etc., of the food. Though the carbohydrates do so little to build up and repair the tissues, they are yet very essential. They act as fuel, and thus save the albuminoids and fats, which, without them, would be consumed. Doubtless all the ingredients join in producing heat and force, though we do not yet know just how they divide this work between them.

Digestible Ingredients of Foods—Ratio of Albuminoids to Carbohydrates.

Of course only the digestible parts of the foods go to nourish the animal. The figures given in the comprehensive table herewith for the percentage of digestible matters, are calculated from the average results of, I should think, some twelve hundred or more experiments, such as have been described in previous articles, each one more accurate and complete than any ever made in this country. The digestibility of some of the materials, as Hungarian grass, which have not been tested, is calculated from the known digestibility of similar foods. The figures obtained for German foods are applied to the corresponding American products. The "nutritive ratio" (in 10th column) expresses the ratio of digestible albuminoids to digestible carbohydrates and fats (each pound of fats being assumed equal to 2.5, or, more accurately, 2.44 lbs. of carbohydrates). This is an important practical matter. The reason why straw, with a ratio of 1:30, that is, only one pound of albuminoids to 30 lbs. of carbohydrates, is not worth as much as good hay with a ratio of 1:8, that is one pound of albuminoids to every eight pounds of carbohydrates, is not simply that the straw has less digestible matter, but that it has less albuminoids. The way to make it good, is to mix it with clover, bran, cotton-seed meal, meat-scrap, or fish-scrap, that have albuminoids in excess. Just this is done with great profit.

The Money Values of Foods

in the table are calculated by assigning a certain price to each pound of digestible ingredients. The prices here are those given by Wolff for Germany in 1879, viz., albuminoids and fats each 4½ cents per pound, and carbohydrates $^{9}/_{10}$ cents per pound. They vary a little, but not widely, from the values in many of our markets. Of course, these values are only relative, and apply only when properly fed. Future investigations will lead to more accurate calculations. The last column shows how the foods compare with good meadow hay (English grasses) taken as a standard.

W. O. ATWATER,
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Editorial Correspondence From the Far West.

The "Centennial State."

The wheat crop in Colorado is not so good as last year. The aggregate yield, however, is larger, because a considerably greater area was sown. Other crops have been good, and instead of having to draw upon Kansas and adjoining States to meet the wants of the people as in past years, Colorado has a surplus of cereal food this year over and above her home wants. Many mountain districts grow potatoes, oats, and rye, without irrigation. Mountain potatoes are richer than those grown in the valleys if the season is long enough for them to ripen. Some valleys, like a portion of the St. Louis, produce without irrigation. As a general thing, however, Colorado farmers find that irrigation is necessary. Colorado promises to become one of the wealthiest States in the Union, owing to her gold and silver mines. The product of these mines for 1876 was computed at four millions of dollars; for 1877 at a little over six millions of dollars. After visiting the mining region, which is about fifty miles in width, and three hundred and fifty miles long, and after consulting with the best mining authorities in the State, I estimate the products of the Colorado mines for 1878 at nearly ten millions of dollars. The estimates are based on the amount of bullion shipped by express companies, and the amount of ores purchased by the agents of eastern parties. While heavy capitalists are working the more important mines, thousands of individuals, with little or no means, are mining on their own account and averaging very fair wages. Gulch mining is still carried on, though not to any great extent. Many of the miners work on what are called "Grub Stakes"—that is to say, after they have obtained a claim, some parties of means furnish them food and sustenance, they in turn dividing the product of their operations. Leadville is the latest theater of active mining operations. There is a great influx of gold seekers thither, and more excitement than has been seen in a Colorado mining region for many years. Three different railroads are extending branches to the Leadville mines, on the expectation that it is to be the great mining center of Colorado for some time to come. Owing to the rapid building of the Atchison, Topeka, and Santa Fe, and the Denver and Rio Grande Railroads, during the past year, Southern Colorado is rapidly developing, and the mines in the San Joan region are attracting many capitalists as well as individual miners. Sheep-growers are also occupying the plains down to the boundary line of New Mexico. One can form no idea of the rapidity with which this country is developing without coming here and making a tour of observation. Owing to the decline in the prices of wool and mutton, and to the snow storms, which proved so disastrous last winter, the sheep interests in some portions of the State are not as encouraging as they have been in the past. A considerable number of ranchmen have disposed of their flocks, and embarked in mining operations, attracted by the reports from Leadville, Silver Cliff, and other points. There is as much antagonism as ever between the cattle-growers and sheep-growers, and some of the former go so far as to maintain that the greater portion of Colorado was never intended for sheep-growing, because never safe during the winter months from fatal storms. There is generally a fall of snow early in the autumn. On October 25th, I encountered a heavy snow storm during a trip through the famous Veta Pass, to Alamoosa, the termination of the Denver and Rio Grande Railroad.

Denver City shows a great improvement over last year, when there was a general complaint of dull times. Now I am told that every building in the place is rented, and that there is a demand for more houses. One sees at Denver, Colorado Springs, and other points in the State, invalids far gone in consumption, who have delayed coming here until it is too late. There is no question but that people with pulmonary troubles are greatly benefited if they come to Colorado in time. It is a great mistake, however, for them to postpone their departure until too far gone to be benefited, and then come on to die among strangers. The Press of Colorado embraces journalists of decided ability, and there are newspapers in Denver which compare favorably with those of the more populous States. While game is disappearing on the plains, it is abundant in the mountain districts this fall and winter. Prof. Aughey and other scientists who have been spending some time in this region, tell me that the range, for example, which divides the North Park from the Middle Park is full of antelope, deer, elk and mountain sheep. The best hunting ground I have seen in Colorado is the North Park. The tourists who overrun the Middle and South Parks, do not, with few exceptions, make their way to the North Park. The game is consequently abundant, and not difficult to approach. In addition to elk and deer, and vast numbers of antelope, there are a few buffalo left here. An occasional rocky mountain lion is also seen.

Utah.

The Mormons are generally good thrifty farmers, and satisfied to work a few acres and work them well. In northern Utah I have found many farmers who had only 40 acres of land. It is quite customary for them to live in villages, and have their farms scattered about in the adjoining country. The object of this has been to secure the protection of numbers. As the danger of Indian forays has diminished, they are beginning to move out upon their farms, to avoid going back and forth every day.

Large herds of cattle are raised in Utah, and driven eastward every year to Wyoming and Colorado, where they bring a sufficiently high price to pay the owners for the expense of taking them thither. I am told by individuals who have made these drives, that they are very enjoyable, abounding in incident and adventure. I know of no better opportunity for men in the older States who would like to spend a summer in the saddle, see the country and breathe the invigorating air of these western territories. They can come out here and either purchase cattle themselves, or hire out as drivers, and then work their way back eastward to Wyoming during the summer months, allowing the cattle to graze leisurely by the way, while they shoot and fish. I know of no more delightful mode of spending a season, when one wishes to exchange civilization for life on the plains, and seeks to combine business with pleasure. It is an excellent experience for young men who are worn down with study and confinement and seek physical recuperation. The population of Utah is receiving steady accessions from colonies of Mormons arriving from Europe. The network of railroads is extending all over the territory, and the farmers are soon promised a new market for their produce, by the rapid extension of the narrow gauge railroad through northern Utah, and Idaho, to the mountain regions of Montana. The new Mormon temple at Salt Lake City, is steadily progressing towards completion, and gives employment to a large number of workmen. A placard upon the walls, however, warns laborers not to flock hither from the country with the expectation of finding employment on the Temple, inasmuch as there are now more laborers than are wanted. Brigham Young, Jr., who, at the time of his father's death, it was generally supposed would succeed him, is now engaged in journalism, and editing some of the Church publications.

APPARATUS FOR MAKING "CLOUTED CREAM."—(*See next page.*)

Minnesota.

Minnesota is making rapid strides in population and material progress. In travelling through the length and breadth of the State, I have witnessed prosperity on every side, and no State in the West appears to me to have a more magnificent future. During the past year there has been a heavy immigration into Minnesota. This is mainly due to the efforts of the State Board of Immigration and of the various railroads having land grants. Among the roads which possess these grants are the Chicago and North Western, the Northern Pacific, the St. Paul and Pacific, and the St. Paul and Sioux City. Some idea may be obtained of the extent of the immigration from the fact that the total sales of land by the Northern Pacific Railroad, for the fourteen months ending Nov. 1, 1878, were 911,859 acres. This will be an interesting item of information to the numerous holders of Northern Pacific Railroad bonds through the United States. When Jay Cooke so disastrously failed in 1873, this road became known as "Cooke's Folly," and everybody supposed that with his failure there would be a general collapse, not only of the railroad, but of things generally through Northern Minnesota. I have been agreeably surprised therefore in visiting this region, to find such evidences of growth and prosperity. Here in this far northern region there is, so to speak, a new world growing up, of which no one can form an adequate conception without visiting it. The original grant of the Northern Pacific comprised about 7,500,000 acres, lying between Duluth and Bismarck, which latter place is 488 miles west from Duluth, and is the present western terminus of the road. It has generally been supposed that the road will be constructed no further west. I learn, however, that the surveys have been made through Dakota with the intention of carrying the road on at an early date toward the Yellow Stone Park. Furthermore, surveys have also been made for a northern branch of the road extending from Fargo 253 miles west of Duluth, up through the Red River region to Manitoba. The St. Paul and Sioux City Road crosses with its main line the Northern Pacific at Glyndon, thus tapping the same region of country, and I should not be surprised to hear any day, that the two roads, both of which are in the hands of Receivers, were consolidated and made one corporation. In fact, it looks to me as though steps were already in progress to this end. This would be one of the most important railroad consolidations in the country. The St. Paul and Pacific Road, or the roads which comprise it, have large land grants. These lands have not yet been placed in the market. Some of them, like those of the Northern Pacific grant, produce splendid wheat crops, and in a comparatively few years this northwestern region promises to raise enough wheat to supply almost the entire country. In a previous letter I sent you estimates of the wheat crop of Minnesota for this year, which made it from ten to twelve millions of bushels. I am now satisfied, however, that these estimates were too low, and that the crop will amount to fifteen or seventeen millions of bushels. Were it not

for those terribly hot days in July, which dried up the wheat in Southern Minnesota, the crop would have approximated to sixty millions of bushels. The St. Paul and Sioux City Railroad, and the Sioux City and St. Paul, which are virtually one line, have together a total land grant in Minnesota and Iowa of about 1,492,000 acres. These lands average about $6.50 an acre. Most of the lands are well adapted to wheat. Many of the New England people are settling in Minnesota, and the great majority of the farmers are of the desirable class. When the St. Paul and Pacific Road is completed to Manitoba, there will be a large traffic opened between Minnesota and the British Possessions. Manitoba is being rapidly settled, owing to the encouragement and inducements which the Dominion Government holds out to immigrants.—A portion of this correspondence, describing the Colorado Sheep Ranches, is given on page 13 of this number.

Notes From Deerfoot Farm.

This farm having become somewhat noted for its products, we present a few items of its operations, gathered on the premises, that will be suggestive, and of practical use to others. The farm shows what may be done by an educated man (a graduate of Harvard) who turns his whole thought, time and energy to farm operations. We have often claimed that a thorough education is just as important, just as useful to a farmer or business man as it is in the professions.

Deerfoot Farm is located in Southboro, Massachusetts, 25 miles westerly from Boston. It now comprises 350 acres, including some rented land, of which 160 acres are in pasture and 75 acres in meadow, which is mowed two and three times each season, the aim being to have all the hay rowen. In five years the yield has been increased from 75 to 200 tons. Some of this has been cleared of rocks at a cost of $200 per acre, and pays a good interest on the investment; 25 acres of meadow now being reclaimed, promises to make the finest grass field on the farm.——Of this farm 200 acres were owned by the elder Mr. Burnett from 1854 to 1871, who kept a herd of superior Jersey cows, but made farming secondary to his other business. Some seven years ago it was taken in hand by the present proprietor, Mr. EDWARD BURNETT, and the entire 350 acres is now mainly devoted to dairy and swine husbandry.

HEAD OF "DEERFOOT BOY," OF DEERFOOT FARM, SOUTHBORO, MASS.

The first year Mr. Burnett sold half a dozen surplus dressed pigs to some friends. Their superiority at once created a demand for more, which called for 30 pigs the second year; 75 the third; 200 the fourth; 600 the fifth; last year about 1,500; and this season between 2,000 and 3,000—which sell at prices nearly double the usual market rates. The chief "secret" of this success is: *First*, in killing pigs not exceeding 200 lbs. live weight, and not over ten months old—those from five to six months being preferred. *Second*, in feeding such food only as will make a firm, healthful flesh—and *Third*, in the killing, dressing and packing. The product is really "pig pork"—very different from common and coarse hog-pork, so often raised upon unclean slops and offal, in the midst of filth and discomfort. About 350 of this season's pigs were raised upon the farm, and the rest came mainly from dairy farms in Vermont and Western Massachusetts, where they were grown specially for this place. They are chiefly Berkshire and small Yorkshire, valued for the superiority of their side sand shoulders. The Essex and Suffolk breeds mature so quickly, that they are too fat for the special use of this farm. The young pigs are fed either with skim-milk, or bran, with one-third oatmeal, but have no concentrated food. They run a good deal in the pasture. At five months, they are given three parts corn meal and one part oat meal cooked to a thick mush. Any purchased pigs found not to be corn-fed, shown by their flabbiness of flesh, are sold in the local markets at ordinary prices. The slaughter-house is as clean as a dairy, and the work is done quietly and systematically. The dressed carcasses hang 48 hours in a large refrigerator before being cut up. The salted pork is put into scalded brine in neat kegs, holding 15, 25, 50 and 100 pounds each, for family and hotel use. The pure kettle-rendered lard from this establishment is a superior article, free from the impurities and foreign substances incorporated with much of the lard sold in the general market. The chines and spare-ribs are shipped fresh to the consumer. The "little sausages" are made from choice parts, such as bits of the chine, shoulders, spare-ribs, etc. Most of the parts that ordinarily go into sausages, here go into soap-grease. Great care is taken to use only the best quality of spices. We have tried the sausages several times, and found them excellent, though not lovers of the article as usually made. "Deerfoot Breakfast Bacon," is another popular product, and the regular demand for it far exceeds the supply. The sides, hams, and jowls, are hand-rubbed with the best salt, sugar, and saltpetre, and turned daily for a month, and then exposed to smoke from green hickory, admitted cool through sub-earth flues. They are sent to market in canvas bags. All the buildings of the farm are simply constructed, at comparatively small expense, and with an eye to profit.

Though the Pork business is a marked feature, and stands as a new departure in this line on a large scale, the Dairy is an important part of Deerfoot farm, as it has produced about 10,000 pounds of high quality butter in a single year. The cows are Jerseys, with a few grades and natives, some of the former being remarkable for their large yields. "Patty" gave 19 quarts of milk per day at 3 years old; "Deerfoot Maid" gave 38 to 39 pounds a day at 4 years old, and another cow yielded 8,532 pounds of milk during 1877 (the largest yield on record we believe), from which 400 pounds of butter were made. A likeness of "Deerfoot Boy," which stands at the head of the herd, is shown in the engraving herewith. The dairy rooms are models of neatness, compactness, and convenience.

Mr. Burnett gives us his method of making butter: "I set the milk 24 hours in tanks, in ice-water, at 45°, then skim and put it away to 'ripen,' letting it turn slightly, which generally takes 48 hours. We churn in summer at 54° to 56°, and in Winter at 60° to 62°, using the old-fashioned barrel churn. When the butter has gathered in grains about the size of large peas, the butter-milk is drawn off and the butter rinsed two or three times with weak brine at a temperature according to the season. It is then worked rapidly with the "Walker Roller," and dried with sponges, and 3 ounces of double refined Liverpool salt added to every 10 lbs. It stands 4 to 5 hours for the salt to dissolve and is again worked rapidly a few times. It is then made into 1 lb. packages, put into tightly covered tin boxes and placed in the refrigerator. Next morning each lump is wrapped in a muslin napkin, previously rinsed in brine, and is ready for market.

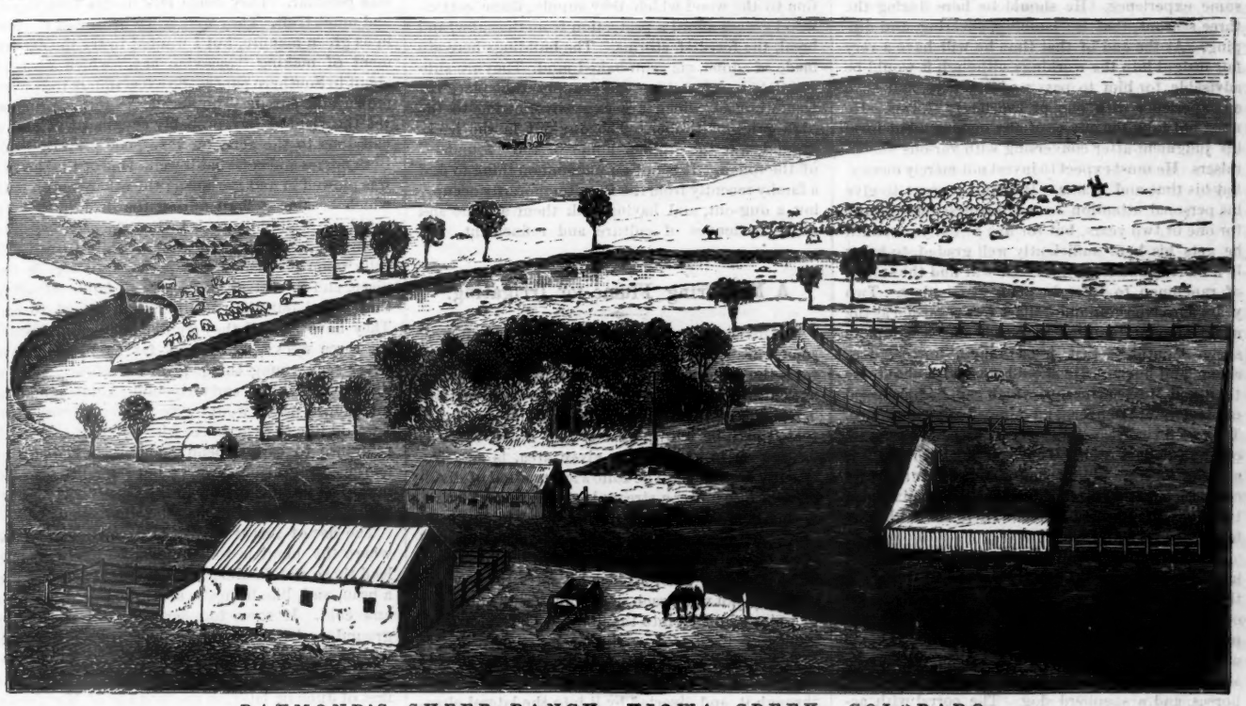
Experiments are in progress to test a use for the the cream, comparatively new in this country. The milk is set in shallow pans and immediately heated to 160 deg., and then covered by a long box holding two large galvanized-iron tubes filled with ice and salt, which cool the milk rapidly to near the freezing point (see previous page). This process gives the "clouted cream," which is so stiff, that a spoon will stand upright in it. So far the experiment is successful; the cream in this form being sold to city families and hotels at a high price.

The large herd of cows and the numerous hogs, consume all the field crops of the farm, besides about $5,000 worth of grain, purchased annually. The large amount of manure produced is rapidly increasing the fertility of the farm; the whole of which was top-dressed with fine manure last fall. A steam boiler and engine drives the machinery of the slaughter house, and a pipe carries steam thence to a small engine in the dairy, to run the churn and heat the water. A book-keeper attends to the accounts, and the whole farm is run on business principles. Mr. Burnett has built up this business by his energy and ability. He loves his work, and is well satisfied with having turned his college education into this channel. He has spent much time, money and thought in experiments, but invites any of his brother farmers to visit and inspect his work and methods, and freely adopt anything they can find useful for their own practice.

Our native Asters are so common everywhere in the autumn months that they are rarely cultivated in our gardens, though they are highly prized abroad where they are known, in England at least as "Michaelmas Daisies." English horticulturists get quite enthusiastic over them, and so would our growers, did they cost a dollar a plant, instead of only the trouble of digging. The New England Aster (*Aster Novæ-Angliæ*) is one of the showiest, with large flowers with rich purple rays, and we have found its rose-colored variety a very fine border plant. *Aster ptarmicoides* is a fine species, with pure white small flowers, excellent for large bouquets. According to Vilmorin, these Asters are readily raised from seed, and, what is not usual with the perennial plants, they flower the first year.

Among the Colorado Sheep Ranches.

Leaving Kiowa, a Kansas and Pacific Railway Station, 31 miles east of Denver, we drove 8 miles over the plains in a buck-board wagon, reaching Col. W. Raymond's well known ranch at the close of a lovely October day. We were warmly welcomed by the proprietor and his young wife, who, having finished her school days in New York, had come two thousand miles to grace a ranchman's home. There is a novelty and charm about this life which attract very many from the older States, and one is constantly discovering in the rough herder's garb, men of education and culture. They are fond of the freedom and exhilaration of this mode of existence, which also promises health, wealth, and adventure. Very many of the herders or hired men are fresh from college; youths who are serving their apprenticeship in the occupation of sheep-raising. Others come here from the Eastern and Middle States to engage in mining operations. They are unsuccessful, become straightened for money, and take to herding because herders are in demand. Their wages vary from $15.00 to $30.00 a month and board, according to capacity and experience. Many not only remain with their sheep during the day, but sleep near them in the corrals at night, as a protection against wolves. On three successive nights since we have been here, these wolves have made a descent upon the corral, killing several lambs. In the early days of Colorado sheep-raising, the herders were accustomed to camp with their flocks wherever night overtook them. This, however, was found to be a dangerous practice, inasmuch as the sudden storms of the Colorado plains would blind and scatter the sheep, and often lead to great loss. Sheep invariably go before a storm. Sometimes they can not be checked, but will push on to certain destruction. We recall one instance where three thousand sheep in southern Colorado, overtaken at night by a sudden storm, blindly followed their leader over a precipice, and perished in the waters below, not one escaping. Now the ranchmen have their sheep corralled at sunset, instead of keeping them out on the plains. In the engraving the sheep are represented as coming in for the night. Though generally manifesting but little intelligence, they invariably display much sagacity in wending their way toward the corral, which they know will afford them protection against wolves, and keep them warm and comfortable. The sheep soon come to know the herders, and manifest as much affection for them as sheep are capable of. It is not well, however, to have them become too tame, because they hang back and do not drive well. The thrifty owner has his sheep out of the corral and upon the plains by daylight. They feed until about 10 o'clock, then "bunch up," or form a compact mass, until 4 o'clock, and from then they feed until driven in at dark. They eat gramma, buffalo, wire, and bunch grass. Wild hay is cut and stacked for feeding in winter, so that they may not want for food should there be a heavy fall of snow. The herders generally have horses of their own, which subsist on prairie grass, are very much attached to their owners, and become wonderfully skilled in managing sheep. Give them the rein and they will gather in and keep the flock together with as much dexterity as the shepherd's dog who accompanies them. The dog is an essential part of the "outfit," being a companion to his owner, and exercising a constant vigilance for the safety of the flock. Herder, horse, dog, and sheep together make a very picturesque appearance as they move over the plains.



RAYMOND'S SHEEP RANCH, KIOWA CREEK, COLORADO.

The flocks, comprising Mexican sheep and their increase from Merino bucks, generally number from 1,000 to 3,000. During the winter the larger flocks are generally divided in order to insure better feeding and better protection. One herder can readily manage 2,500 sheep, but he has to have his wits about him constantly. The leader of a flock is generally a Mexican goat, whose prowess is recognized by the whole herd, and whose prominent figure enables him to be easily seen both by the sheep and the herder. In the accompanying engraving there is seen heading the sheep, the famous "stag" Christo. This venerable goat has a history. He was brought from New Mexico many years ago, has been a leader for several different flocks, and now in his old age, though so decrepid as to travel at times with difficulty, has no idea of surrendering his leadership, but is invariably found at the front when necessary. The whole expression of his countenance, his dignified bearing, even his walk and the firm manner in which he plants his front feet, indicate that he realizes his responsibility and feels his importance. Old Christo shows an intelligence at times which is little less than human. For example, he snuffs the approach of wolves from afar, and often, when the unsuspecting sheep and lambs about him are sleeping in fancied security, he wakes the ranchman to make known the approach of the enemy. When no herders were sleeping with the sheep, he has recently, upon two occasions, taken the entire flock around the ranchman's house in the middle of the night to arouse him and secure protection from the advancing wolves. Christo, who is twenty-four years of age, will probably be gathered to his fathers this year, and he has so strong a hold upon the affections of his present owner, that he will be buried with due honors.

The Mexican sheep, as a general thing, are purchased about the first of October. The bucks are turned in with them in December, and the lambing season begins about the middle of May. Shearing begins about the first of June. The Mexican sheep shear from two to four pounds, and improved sheep from four to eight pounds. Of course there are exceptions; for example:—The Willard Bros., at their shearing-match last year, clipped thirty-two and one half pounds of wool from one Vermont ram, which brought twenty cents a pound. In shearing sheep great care must be exercised not to begin too early, on account of late storms. The shearers are paid from five to eight cents a pound for their work. One man can shear from twenty to seventy sheep in a day. Mexican wool brought last year from sixteen to twenty cents a pound (prices are much less this year), according to the absence or presence of "kemp," a hairy, valueless substance. As sheep improve, the quantity of kemp gradually diminishes. The fleece of the native Mexican sheep is a coarse carpet wool, but as the flocks are improved by the introduction of Merino bucks, the quality of the wool is improved, until many of the ranchmen now claim that it is fully as good as that grown in the Eastern States. They further maintain that when their improved sheep become disassociated in the public mind from the native Mexicans, their wool will justly command as good a price as is paid for Eastern fleece. Owing to the scarcity of water, sheep are rarely washed in Colorado, and it is stated that many tons of dirt are annually shipped east in the Colorado fleece. Until recently, the ranchmen disposed of their wool to local dealers and agents. Two years ago they began to consign it to New York, Boston, Philadelphia, Hartford, and other Eastern houses.—The main disease among the sheep is scab, which is due, like the itch in man, to a minute mite, and may be communicated from one animal to another. The treatment is, to dip the sheep in some liquid that will destroy the parasite;

the dipping apparatus costing from $50 to $100. The principal dip is composed of tobacco, sulphur, and sometimes arsenic and soap. Three men can dip twenty-five hundred sheep a day. Scab does not affect the wool itself, but causes the sheep to lose wool, often to a considerable extent.

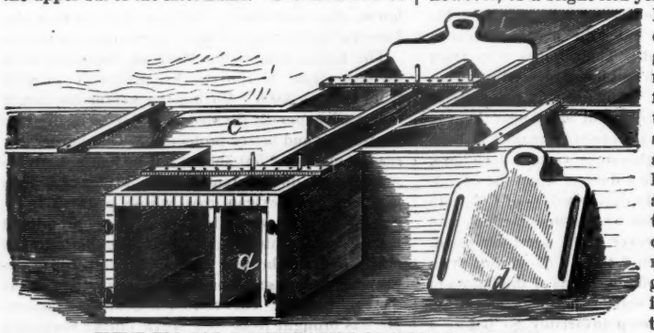
While sheep-raising presents so many attractions, it is no child's play, as many coming here from the East learn to their sorrow. Drones cannot succeed in this better than in any other business. Money, muscle, and brains are required to achieve success, and the idea that owners can live in the East, and safely trust their flocks to the management of others here, has been rudely dispelled. One has got to be upon the ground, and superintend his own ranching operations, if he expects to prosper. Upon coming to Colorado, to engage in sheep-raising, a man should hire himself out as a herder, in order to learn the details. No man should embark in the business, until he has had some experience. He should be here during the three seasons, that is: lambing, shearing, and dipping. At the end of that time he will have a very fair insight into the workings, although it would be advisable for him to pass a winter here, and have an experience with one of the heavy storms. He must not take the advice of any one man, but form his judgment after conversing with various sheep-raisers. He must expect to invest not merely money, but his time and brains. He must expect to give his personal attention to the business, not simply for one or two years, but for five or ten years, until he gets his herd sufficiently well graded, to bring in a fair income from wool. He will find the stories of ranchmen to differ in many particulars. Two years ago five thousand dollars was regarded as the usual amount required in purchasing a complete sheep "outfit,"—that is—a ranch, horses, dog, sheep, and bucks. He should start with about one thousand Mexican sheep, which can be purchased of dealers at Denver, and almost anywhere else. They sold two years ago for two dollars to two and one-half dollars each. They can be purchased this autumn for from ninety cents to one dollar and fifty cents each. The Vermont bucks will cost him from twenty to fifty dollars apiece. There should be one buck for every fifty sheep.

He will not be required to pay anything for his land, which belongs to the Government. Generally the buildings and ranch franchise can be purchased of some one, who, for various reasons, wishes to make a change. If the new comer locates on a new range, he will have to build a dug-out or an adobe house, and must have a wagon, a span of horses, and a shepherd dog. The corral with accompanying shed, should be built as soon as possible. If he has his family with him, he should purchase the needed household furniture here. The rates of freight are so high, that as few effects as possible should be brought from the East. He should employ a herder to watch the flocks, while he himself keeps close guard over the bucks. He must make up his mind to be absent from the ranch only a few hours at a time during any season.

In selecting a range, wood and water are the great essentials. It is for this reason that the ranches through Colorado and the other Western States and Territories are generally located along the streams and river bottoms. Some of these streams are very treacherous. For example:—Kiowa Creek, running by the ranch in which we are now writing, contains very little water in the summer, and is apparently a harmless river-bed. There are times, however, when it swells into a roaring torrent, carrying everything before it. One evening, last May, while Col. Raymond and his herders were sitting around the big fireside, a noise was suddenly heard, outside, like the rushing of many waters. Quickly opening the door, they plunged into water, and found torrents rushing through the corral. They had barely time to tear down the boards and get the sheep upon higher ground. Nearly all the lambs, amounting to several hundred, were carried down stream and perished. This water-spout, for such it proved to be, swept over the plains for a long distance each side of the Creek, carrying off sheep, cattle, ranches, trees, etc., and destroying valuable pasture-lands by covering them with a thick coating of sand and drift-wood. A short distance below here, the railroad bridge over the Kiowa Creek was swept away. An unwarned freight train soon after came rushing along. The empty cars floated down stream, but the engine has not been found to this day. Gangs of men are still searching for it in the quick sand with long, iron poles. A party of laborers came all the way from Lawrence, six hundred miles distant, to "fish" up the ill-fated engine, and expected to remain only ten days. They are still at work now five months after the accident occurred. This is as remarkable an occurence as the fall and disappearance of a section of the railway bridge at Omaha, a year ago. Water-spouts are of rare occurrence, but they are one of the things which a new-comer should have in view when locating his ranch. The little grove of trees seen in the engraving, are cotton-wood. This is the only thrifty tree that grows spontaneously on the plains. In addition to the wood which they supply, these cotton-wood groves afford a protection from the snow, and break the force of storms. The buildings here are made of adobe, viz., sun-baked mud. They are substantial, comfortable, and supply the place of frame houses, which are expensive, owing to the high price of timber. The dug-out in the background, was the original home of the "founder" of the ranch. It is not an uncommon thing to find a family recently from the East, temporarily occupying a dug-out, and having with them a piano and other evidences of culture and refinement.

A Measuring Flume for Irrigating.

The division of water flowing in irrigating ditches, sometimes gives rise to dispute, especially where water is the prime necessity of life, as is the case when agriculture is wholly dependent upon irrigation. To divide a stream flowing into lateral canals, so that it may be known exactly how much water is flowing on to any field or given area, is also frequently desirable. The following method of dividing and measuring a stream is simple and effective. A flume of any desired size, is fitted in the main secondary channel, and a scale of inches marked upon the sides and the top as shown in the engraving. A sliding gate, fitted with set screws which work in a slot upon each side, regulates the quantity of water admitted into the flume. The water is divided by means of a sliding gate, *a*, which is held in place by pegs as indicated, so that it may not be moved by the pressure of water flowing through it, and diverted by it into the lateral channel. The sliding gate is set to deliver the quantity of water required by means of the scale of inches upon the upper bar of the inlet flume. The remainder of



FLUME FOR EQUAL DISTRIBUTION OF IRRIGATION WATER.

the water passes directly onwards through the flume, or it may diverted wholly or in part by means of the gate *c*, and a second sliding gate, upon the other side, made like, and operating in the same way as the first. The effect will be as follows. A square foot of water, more or less, is flowing through the opening of the flume, which is at the front of the cut. By lowering the gate fitted into this opening, (shown at one side at *d*,) the quantity of water may be reduced to as many inches as are required to pass through. This stream may be equally divided into the three channels, by placing the sliding gates, one at 4 and the other at 8 inches, as marked on the top of the frame of the flume. This is shown in the engraving. If the whole of the water is wanted in one lateral, the slide is drawn over to the opposite side and the whole stream is diverted. If no water is wanted in the laterals, both the slides are shut, and the whole stream flows in the direction of the arrow. The flume should be made of 1¼-inch plank for a large size, and of inch boards for a smaller one. A corner block should be set in each angle of the slides to strengthen them. A flume somewhat similar to this has been in use at Greeley, Colorado, for some years, with much satisfaction to the parties concerned in a just division of the water.

Among the Farmers.—No. 36.

BY ONE OF THEM.

Cow-Peas for Horses.

We had two patches of cow-peas. The season was peculiar. They made less haulm than usual, and much fruit. They were sown broadcast to plow in as green manure, but I wanted to try the experiment of making "pea-vine hay," which we read about in Southern papers. So a few square rods were mown and cured. The shrinkage was enormous, yet the yield of hay probably equalled two and a half tons to the acre, on very poor gravelly land. Both horses and cows eat it well. One of the patches was plowed in and rye sown; the other was on land which became so hard during the drouth, that we could not well plow it, and when the seed began to ripen, we let it go, and after a while turned the colts upon it. There was perhaps an acre in the piece, and the leaves had nearly all fallen off before they found out that the peas were good to eat. They have had all they wanted and grass besides for three weeks, and are as fat as pigs. I have never seen young things grow so before. With a little painstaking, early ripening kinds might be introduced which would give us a crop every year. I would like to experiment with different sorts with reference to early ripening and to abundance of haulm for green manure. Both qualities would hardly be found superior in the same variety. That which I used this year, was the "clay" pea.

The use of this word "pea," which is universal where the plant is well known, is likely to mislead those not familiar with it, for it is more like a bean, and, like beans, is sensitive to spring frosts and cold. If sown too early, it will rot in the ground, or "live at a poor dying rate," until hot weather comes, and not do well then. So it must needs be planted during the last half of May to the first of June or later, in the latitude of May frosts.

Webb's New Kinver Yellow Globe Mangel

has everything in its favor except color. It is, however, of a bright rich yellow on the out-side.—I like a good deal of color inside of a mangel, which this has not; nevertheless it is perfect in form—globular-top-shaped, I should say, with so little top, and of course equally little neck, or no neck at all, that one wonders that so little foliage can sustain so much root and such vigorous growth; for I suppose it is as true that the top sustains the root, in all senses but one, as that the root does the top. It is a great cropper, very firm, sound, and sweet. For a new kind it sports very little—wagon-load after wagon-load showing surprisingly few specimens which indicated a departure from the normal form. They were sown in drills, ridged up over a fair quantity of good yard-manure, or superphosphate where the manure failed.

Sheep and Barbed Wire Fences.

It seems as if the use of barbed-wire fencing was going to make it possible, and if possible—policy, for us to keep sheep. It will not do, however, to turn the sheep into fields enclosed in whole or

in part with barbed wire, at this time of the year. Their wool is so thick and long that they do not feel the barbs, which thus only serve to tear out the wool. The thing to do is to put the sheep into such lots in the early summer, when they soon contract a wholesome dread of the fence, and will keep away from it thereafter. With other animals, the only thing necessary is is to let them once get acquainted with its general appearance and the results of too close contact with it. If it be really true that sheep may be conveniently controlled in this way, I see no reason why a radical change in the agriculture of some of the older States may not result. Sheep require very little labor in their management, little shelter, coarse food, straw, weedy hay, and roots, with a little corn, best fed unground. There is always a market for lambs, and for fat mutton; the wool and the skins sell also; but after all, the best thing about sheep-keeping is the facility with which straw, stalks, swamp hay, and other vegetable substances may be converted into manure. Speaking of

Changes in Agricultural Practice,

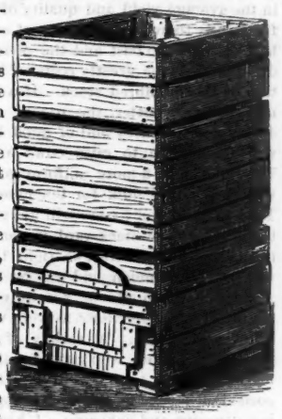
none is greater than that effected by the handling of milk in great quantities by cheese factories, butter factories, and creameries. These are extending with great rapidity all over the country, relieving the farmers' wives from untold drudgery, while their habits of industry find for them full employment in other ways. Among other things to which my attention has been particularly directed, is

The Use of Skimmed Milk.

This is much better and more wholesome food than most of us who have been brought up in the country, and upon plenty of milk, are apt to think, and until they learn better, city-folks, of all others, have a horror of skimmed milk. Milk disagrees with a great many people. If they drink it, pure and fresh, it gives heart-burn, and other forms of indigestion, headache, etc. Even children, frequently, can not drink it freely. The number who can not take as much skimmed milk as they are inclined to is very small. The now common plan of using deep coolers, or 15 to 18-quart pails, which are tall and narrow, and kept nearly submerged in cold spring water until ready to be skimmed, which is within 24 to 36 hours usually, gives an abundance of sweet skimmed milk. If either of the air-tight systems, Cooley's or Hardin's, be followed, the skimmed milk and cream may be separated in 8 to 12 hours, and the milk from having been excluded from the air is found to be sweeter (because of the presence of sugar) than even milk fresh from the cow. Milk is slightly alkaline when first drawn, from the presence of less than a tenth of one per cent of free soda. The action of the air is to rapidly convert the milk-sugar into milk-acid, and this of course neutralizes the alkali; then, the formation of acid still going on (more slowly as the milk cools), after awhile it loses its sweet taste, and before long is perceptibly sour. We are used to seeing and tasting skimmed milk between the loss of its sweetness and the time when it becomes positively sour. Excluded from the air, this chemical action can not go on. When, therefore, the cream is removed, the full taste of the sugar may be better observed, and so it seems actually sweeter than at first. Such "skim-milk" ought to be retailed at half the price of "whole milk" in all of our cities, and it would furnish a most admirable article of diet for families with moderate means. [In some cities the sale of skimmed milk is prohibited. EDS.]

Keeping Potatoes Through the Winter.

In cold weather, when the temperature can be regulated, potatoes keep well enough, but in warm cellars, or during warm spells, I find it difficult to prevent their starting, and we have to rub off the sprouts. I saw at Dr. Hexamer's, a few weeks ago, a contrivance which it seems strange has never been described and figured by the agricultural papers. The doctor takes any old boards or strips, and with them makes little bottomless bins about 2½ feet to 3 feet square, and 2 feet high—at any rate, large enough to hold 5 bushels with tolerable accuracy. The corner pieces project an inch below the lowermost strip, and fall short the same amount at the top. Three of these bins constitute a set; two of them are alike, but the one to go on the bottom has a bottom to it, and a cheaply made slide-door on one side. When the potatoes are harvested, these bins are filled, the bottom one first of course; then another is set upon the top and filled, and so on. Thus 15 bushels are held in a very compact space, and yet the air passes freely through them. These sets of bins are placed side by side with the sliding-doors accessible. Now when the potatoes need stirring—which they do once in a few weeks, and oftener towards spring—all that it is necessary to do is to raise the door, and take a bushel-basketful out from the bottom and put it upon the top. Thus every potato in the whole bin is turned, and its relations to air and moisture more or less varied—at least, enough to stop or greatly to interfere with the first beginnings of sprouting.



TO VENTILATE POTATOES.

When necessary, the whole stock may be conveniently "overhauled" and picked over, one set of bins at a time. In such bins different sorts are conveniently separated and kept distinct, and any kind or all are accessible at any time, and whenever bins are emptied they may be removed and space gained for other things. Smaller bins for the same purpose hold about one barrel each.

Crushed Grain for Horses.

Oats are justly advocated as the grain above all others adapted to horses—and it is true, that for young horses, and those used on the road, there is probably nothing equal to oats, but they ought to be crushed or bruised and not ground. In fact, I think all grains are better fed in this way, and it seems strange that there are no good American oat crushers. They seem to me simple affairs—as I have seen them in English stables. A wheel of perhaps 18 inches diameter, made strong, and having a perfectly flat periphery, of steel, I presume, like a steel tire, having a face about 3 inches wide, is turned so as to bear evenly against a smaller one of say 8 inches or less in diameter, having a similar face. These two wheels are geared to turn together, and the oats are slowly fed in by a hopper. Good oats, when crushed, are nearly round and as big as a silver 3-cent piece, and the husks are quite inconspicuous; poor ones show more husk than grain, and retain more nearly the form of the uncrushed oat. Barley may be crushed equally well with oats, although harder; and corn, when too green to grind, might well be thus treated. If grain be swallowed whole it is not easily digested, but if crushed, or broken even, it is likely to be. "Coarse meal," that is, the corn-meal usually sold for feeding in many Eastern towns, simply because it can be cheaply produced, is better than whole corn, because it is broken and some portion of it tolerably fine, but all the flinty part is in large solid pieces, which do not adhere to cut hay, do not soak quickly, and are slow of digestion. When new corn is crushed, although it is not comminuted into meal, its integrity is destroyed and is easily digested, because it readily absorbs water or the juices of the stomach.

Value of Turnips.—A Connecticut farmer estimates the value of turnips [the flat English turnip in his case,] as a food for milch cows at 25 cents per bushel. He arrived at these figures by noting the diminished yield consequent upon leaving off the feed of turnips. The roots did not save the hay, as quite as much was consumed with as without them; but the turnips, as also shown by European experiments, were an aid to the digestion of the hay and similar fodder. Succulent roots of any kind, make up for other deficiencies of hay and grain, and render the whole ration more like the natural summer food, keeping the digestive apparatus healthy and active, and a relish to the drier food.

The Practice of Veterinary Medicine—Will it Pay?

BY A. LIAUTARD, M. D., V. S.

The attention of our people has been directed, within the past few years, towards Veterinary Medicine; many able writers have urged its importance and have presented the claims of this much neglected profession. Yet, notwithstanding this, young men of good education and social position hesitate to join the ranks of the veterinarians, and the number of skilled practitioners remains far short of the needs of the community. Young men are deterred from becoming veterinary practioners, in part, because of the low standing of some who claim to belong to the profession, and in part because the prospect of present success and an ultimate competence, if not a fortune, is not satisfactory. The importance of veterinary science to the agriculturist generally, and to the stock raiser especially, its relations to farm economy and to national health have been forcibly presented, and in a manner to direct young men towards its study. But these have not been sufficient. We are a matter-of-fact people, and while we are as ready as any other to admit the claims of science or art, and fully appreciate and recognize the importance of veterinary science, we are also ready to ask—*Will it pay?* This is an important question, especially to a young man who is considering the selection of an occupation or profession for life, and it is very proper, in considering the veterinary, or any other profession with a view to making it his life's work, that he should ask, "*Can I make a living by it?*" While this may seem to the pure scientist a material view to take, it is one that in this work-day world must be taken, and the question is a very proper one.

It is to attempt to reply to this question that this article is written. The best method of showing what may be done is to point out what has already been accomplished. Not long ago I addressed a letter to several veterinarians, all of whom are graduates of the American Veterinary College, who have been engaged in practice, some for several years, and others for a few months. The object of this letter was to obtain such statistics as might be of use to those who are considering whether they shall become veterinary surgeons, and, by showing what others have done, give them, so far as possible, some idea of their own future prospects.

States where the gentleman is practising.	*When graduated.*	*How long in Practice.*	*Returns from Practice in the*		
			First Year.	*Second Year.*	*Third Year.*
Penn'a.	1874	4½ yr's.	$475	$530	$650 *
Rhode I.	1877	17 mos.	$600	$75 a m'th.	.....
Penn'a.	1874	4½ yr's.	$1500	$3000	..... †
N. Jers'y	1878	few mo.	$60 to 75 mo.	.....	.....
N. York.	1867	sev'l yrs.	$4000 to 6000 yr.	$4000 to 6000	$4000 to 6000
N. York.	1878	few mo.	$100 to 150 mo.	$100 to 150 m	.....
N. Jers'y	1878	few mo.	$300	.....	..... ‡
Mass'ts.	1878	few mo.	$75 to 160 mo.	.....	.....
N. York.	1876	2½ yr's.	$1800	$1600	$1000 6 m's.
N. Jers'y	1876	2½ yr's.	$600	$1554	$2200 §
N. York.	1871	4 years.	$800 to 900	$800 to 900	$800 to 900 ‖
Mass'ts.	1877	19 mos.	$2000	$2000	$2000 ¶
Maryl'd.	1876	2 years.	$700	$1000	.....
N. York.	1878	few mo.	$125 to 150 mo.	.....	.....
Mass'ts.	1876	2½ yr's.	$1000 to 1500 yr.	$1000 to 1500	$1500 **
Ohio.	1874	4 years.	$1200	$1200	$1200 **
N. York.	1875	3 years.	$300	$500	$800

Among the questions was one asking if the person had any regret at having adopted the profession, but as the answers to this was invariably "no," we omit that column.

* Subsequent years. $1,480 to $1,530. Expect to double it as soon as general trade is better. † Now in partnership, expect to make it $2,500 to $3,000. ‡ Regrets he did not qualify sooner. § Well pleased. ‖ With increasing profit, proud of it. ¶ Would not change for an M. D. ** In partnership.

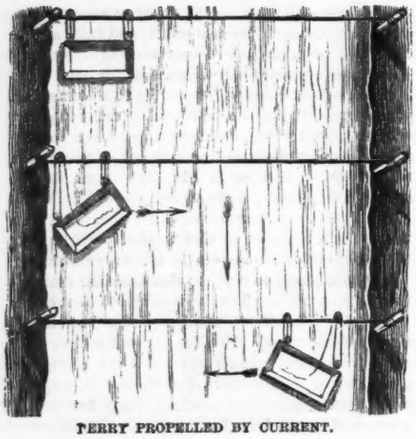
A few of the answers to this letter—enough to show their tenor and scope—are here condensed in the form of a table, which may be carefully considered by those young men who hesitate to enter the veterinary profession for fear it may not pay. What profession, what trade, what occupation of any kind, can offer to a young man better inducements than this table shows? This whole country, with costly and valuable stock in every direction, is a field waiting for careful exploration, and, unlike most opportunities for scientific research, it promises at the same time to be remunerative as well as

useful. It is not probable that the ranks of veterinary medicine and surgery will for many years to come be even fairly filled—much less crowded—which can hardly be said of any other profession.

[We are glad that Doct. Liautard has presented the pecuniary advantages of veterinary practice in this manner, for we have often advised young men who proposed studying medicine to learn all they could at a medical college, and then give their attention to veterinary medicine. This presentation, however, calls for a word of caution. If a young man enters the veterinary profession merely *because* it promises to be profitable, he will surely fail. It is still less than the medical profession, an occupation for those who are fit for nothing else, and too lazy for manual labor. Unless a young man feels attracted to this profession more strongly than to any other, the chances of success are small. It is to encourage those who feel thus inclined, but are deterred by doubts as to the future, that Doct. Liautard has presented the above article.—EDS.]

Self Acting Ferry Boat.

A correspondent sends a sketch of a self-propelling ferry boat, to be used in crossing streams in which there is a strong current. The boat is a common flat bottomed scow, but it would be more



FERRY PROPELLED BY CURRENT.

effective with a side-board to be let down the same as the center-board of a sailing boat. The boat is attached to the guide rope, stretched across the stream, by pulleys and tackles as represented in the engraving. When the boat is parallel with the guide rope, it is stationary; when one of the tackles is let out, the boat takes a diagonal position, and the current striking the side of it, pushes it across the stream. By having long ends to the tackle which can be fastened to the posts on the banks of of the stream, the tackle may be drawn up, even when the boat is on the opposite side of the stream, and be brought over for use without much labor.

Winter Milk Profitable.

The average farmer in the Northern States only plans for milk during the grazing season, from May until October. His cows drop their calves as near the first of April as possible, the calves are killed or weaned by May 1st, the milking season follows, and the cows are dried off in October or early November. For four or five months in the year the cows yield no profit, but make a heavy bill of expense for food and labor. That a good flow of milk can be secured through the winter, is demonstrated by the abundant supplies that our large cities receive from the milk dairy districts. These districts lie mainly within 150 miles of the city, and the milk supply of the preceding day is distributed to customers in the morning. Farmers are turning their attention more and more not only to the supply of this traffic in milk for the large cities, but to the supply of fresh butter for the local markets. If three months or more of milk production can be added to the year, it will make a very important addition to the income of the farm. The interest on the money invested in the herd has to be paid, whether we get milk from them for six months or ten. To secure the best results from a milking herd, three important matters are to be looked after: the stock, shelter, and fodder. These things are grievously neglected by old style farmers. "A cow is a cow," is their proverb, and "the breed is all in the trough" is its twin adage. Experience teaches observing farmers that both proverbs are false. In many herds there is a great difference in the average yield and quality of milk. Not infrequently there is a difference of one-third or one-half between the best and the poorest cow. This difference can be greatly reduced by the introduction of thoroughbred stock. If a farmer wants to make winter butter, the use of a thoroughbred Jersey and Guernsey bull of good butter pedigree, will enable him to raise cows for this purpose. They will be of a more uniform good quality, and will give richer milk for ten months in the year. Then as to shelter; cows will not give milk in winter if fed at the stack-yard in zero nights. They must have warm barns, so tight that the manure will not freeze much, and yet be well ventilated; and the barn should be not only a shelter, but a manufactory of fertilizer as well, which involves a cellar underneath. A variety of fodder is also necessary. Those who cater for the milk market, use in addition to early cut hay, brewer's grains, corn-stalks, corn-meal, shorts, apples, beets, carrots, turnips and cabbages. I have found sugar-beets and mangels to be cheaply raised, and an excellent ration for producing milk. CONNECTICUT.

A Log Tram-Way.

A roughly constructed but effective railroad has recently come into use in lumbering regions, which is worthy of notice for its applicability to agriculture and other industries where the moving of coarse heavy matters, such as manure, produce, earth, stone, etc., is often necessary. Such a road was constructed and used by the writer several years ago for the purpose of moving a large quantity of earth in making a long and deep cutting through a hill. It was then found that earth could be moved a distance of 800 to 1,000 feet, by means of roughly constructed cars with wooden wheels, drawn by horses, upon a portable wooden road, at a fourth of the expense of carts or wagons. A similar experience has resulted from the use of the same kind of road in the great northwestern pineries, where the rapid consumption of timber has driven the lumbermen to localities remote from water transportation. The rails are logs, either in their natural shape, or squared, or rounded, which are mortised or spliced together at the ends, and are held in place by cross-ties into which they are sunk and pinned. Or stakes may be driven into the ground on either side to hold the rails in position, as there is little possibility of their spreading; in this case the cross-ties, if used, are simply laid on the ground, which is leveled as may be necessary to make a satisfactory bed. Six feet apart is a convenient distance for the rails, as then a double team may be driven between them. A 3 or 4 feet gauge is sufficient when but one horse is used. To form curves, saw-cuts are made on both sides of the rails, which are then bent and held in place by stout stakes (fig. 3). The wheels, fig. 2, are cast with a wide face, sometimes 14 inches across, and with deep flanges—4 inches for large wheels—to keep the wheel from mounting the rail. The axle is of iron, from 1 to 3 inches thick, as may be necessary. At figure 4 is shown the manner of joining the rails by means of a dovetailed mortise and a bolt.

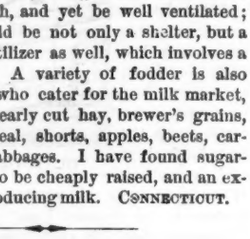


Fig. 1.—FARM R. R. CURVE.

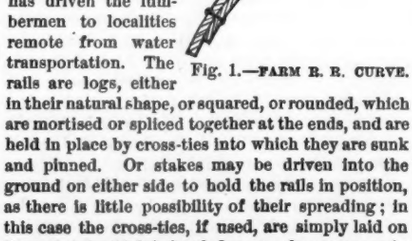


Fig. 2.—LOG RAILROAD FOR LUMBERING.

For light work, such as drawing in crops, moving manure, sanding cranberry marshes, or moving

Fig. 3.—CURVE OF LOG RAILROAD.

earth in grading, a tram-way may be made in sections, of light scantling, 2 x 4 or 3 x 5, with the ends halved together. For curves the rails may be made of strips of board, bent to the desired shape and held in place by cross-ties and iron bolts. Wheels, with flanges, may be constructed of hard-wood plank, with axles of 1¼-inch round iron. There are many cases where tram-ways of this description would be more economical than wagons drawn by horses or oxen, as when a great deal of manure is to be carted to the fields each year, and especially where lumber is cheap or grows upon the farm. The laying of the track is easily done by putting down a few sections, loading a car with other sections, which in turn are laid as the car is moved along. Several hundred feet may thus be laid in an hour, and the road taken up and put down in another place in the same manner. Roads of this kind have been in use for some time on French farms where beets are grown for sugar making, and heavy crops of fodder are produced for feeding cattle.

Fig. 4.

Useful Hints for Cold Weather.

Popular Errors.

A common error, one often injurious to health and not infrequently fatal to human life, and one greatly unprofitable in the care of stock, is illustrated by the practice of some farmers we remember in our boyhood days on a western farm. The error is quite prevalent still. These farmers kept their sheep especially, and sometimes other stock, in open fields, or at best, in exposed yards and sheds, allowing them to feed from the sides of open hay stacks. Hay was cheap, and the sheep ate it voraciously. This large consumption of food was considered a mark of vigor, and of health even. (We do not forget that these farmers were accustomed to apply pine-tar freely to the noses of their sheep in spring, to cure a sort of catarrhal discharge always prevalent, but attributed to something outside of the real cause.)—Many parents, alas! believe, and practice upon the belief, that thin clothing, sleeping cold, and bare legs and arms, harden children and make them vigorous. What are the facts?

Our bodies are warmed precisely the same as our rooms are warmed. In burning wood, coal, corn, wheat, oil, etc., the oxygen of the air unites with the carbon (coal) of these substances, producing carbonic acid which escapes unseen. In thus combining, heat, before insensible, is given out in a sensible condition. (Scientists will excuse this form of illustration.) When we *eat* the corn, wheat, flour, meat, or other food, it is worked up or digested in the stomach, goes into the blood, and there meets with oxygen from the air absorbed into the blood through the delicate membranes of the lungs. Each atom of food that unites with an atom of this oxygen in the blood, produces carbonic acid, and *gives out heat* which warms the blood, and through it the body. (The carbonic acid is breathed out through the lungs, and escapes invisible, just

as it does from the fire.) When no food is taken for some time, the reserved supply of fat and flesh stored in the body is consumed to supply the heat needed to keep the body alive. Let it be fixed in the mind that all the heat of the body must come from food actually burned in the blood, or, in the absence of food, from burning some of the substance of the body itself. We do not *see* the burning, simply because only very small atoms are burned at any one point; but the facts are just as stated.

But heat is always escaping from the surface of the body, and the more there is escaping, the more fuel (food) must there be supplied, or more of the fat and flesh of the body will be consumed and wasted, and the body decreases in weight and substance. If just enough food is supplied, there will be no change. If there is supplied and digested more than enough food to meet this heating requirement and the other wastes, flesh and fat will accumulate in the body. Is it not clear that if, by warm clothes, by warm rooms, and warm barns, we stop some of the heat from escaping from the surface of our bodies and those of our animals, less fuel (less food) will be needed for producing heat in the blood? Those sheep referred to above were obliged to eat much hay to keep from freezing to death. A good shelter to ward off the driving winds and showers that so rapidly carried away their heat, would have saved a great deal of food. A warm barn or enclosure would have saved more. They crowded close together to catch from each other the escaping heat, which helped some. Bees, by clustering closely in winter, save a good deal of heat.—This explains why animals take on flesh faster from the same food in warmer than in colder weather. They use up less in supplying heat. Cows, in warm quarters, and in warm weather, secrete and furnish us with carbonaceous butter, which they must burn to supply loss of heat in cold weather, when not warmly sheltered.

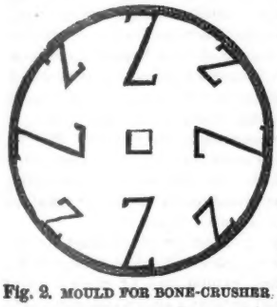


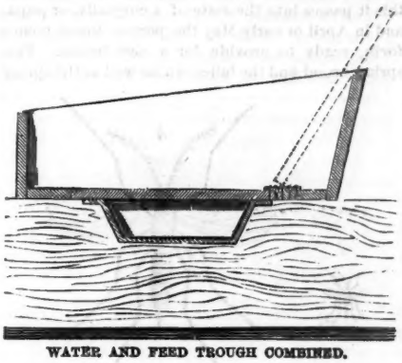
Fig. 2. MOULD FOR BONE-CRUSHER.

Another Important Point.—If we wish a certain amount of heat from a steam boiler, that furnace will give it with the least amount of fuel which is protected from loss of heat in other directions. If the furnace have a poor covering, or if much of its heat escapes in the chimney, you must pile on the fuel, often to the gradual or even rapid burning out and destruction of the furnace itself. Now all our food that is to be of any use must be worked over into proper form in the stomach. It does not get into the blood until it is dissolved in the gastric juice, and has made a draft upon the liver and other organs for certain fluids to change it into a form which the blood will absorb. The more food the stomach has to work up to supply heat wasted through insufficient outside protection, the greater is the labor needlessly put upon it, always exhausting, and resulting in debilitation, if not disease. There is no questioning of the fact, that multitudes destroy the furnace (the stomach), or injure it, and over tax the other digestive organs, and bring on disease, consumption, etc., simply by the fatal error of supposing that exposure to cold promotes vigor.

Simple Water Fountain for Chickens.—"A. R. P.," Philadelphia, referring to the water fountain for chickens, described on page 336, September number, suggests an improvement. Instead of cutting several high notches, as there illustrated, he would cut or file but one, and that a triangular notch, only ½ inch high for a saucer or pan in which water would stand ¼ to 1 inch deep, as indicated in the engraving. Fill the can with water, place the saucer on top, and quickly reverse it, and you have a "pneumatic" fountain holding about one quart, which the chickens can not foul. As the water is drunk or evaporates, more runs out of the can, keeping the saucer always full to the hight of the notch.

A Water and Feed Trough.

A supply of water in the cow-stable is a great convenience; a simple arrangement for furnishing it to the cows in their stalls may be made as follows: Sheets of galvanized iron are bent to form a trough, and fitted into the floor joists under the feed-box, as indicated in the engraving, making a trough 3 inches deep and 16 inches wide. The flanges on each side are nailed to the joists, and the sheets of iron riveted together at the ends, and made water-tight by cement. The trough runs the entire length of the feed floor, and is supplied with water from a pipe, pump, or hose; a pipe at the other end carries away the surplus water and prevents overflow, and another pipe with a faucet is provided for emptying the trough. The feed-box is built over the water trough, a part of its floor being a trap—indicated by dotted lines in the engraving—by which admission to the water is gained. Before opening this trap, the manger is swept clean; and if there were no other advantage than this compulsory cleansing of the mangers after each feeding, it would be sufficient to pay for the cost of constructing such a watering arrangement.



WATER AND FEED TROUGH COMBINED.

It does not Pay to Cut Corn Fodder.

Every hour saved, even in winter, is an hour gained, the product of which may be added to the profit side of the balance sheet. When corn-fodder is properly cured, there is no more need of running it through the hay-cutter, than for rowen hay to be so treated, as is shown by the experience of many practical farmers. One experimenter found that his cows ate all but ten per cent of the whole stalks, while they ate *no more* when the stalks were cut fine. These stalks were from the regular corn field, but had been harvested and cured in such excellent condition that the cows were fed on them and corn meal and bran, receiving no hay, without reducing the milk yield. The corn-stalk orts were run through the hay-cutter, and then spread behind the cows for bedding, so that thus no long stalks got into the manure, while nine-tenths of the labor of cutting the stalks was saved. Other farmers report like results from similar experiments. Of course if the corn-stalks have been carelessly allowed to become dry and hard in the field, it pays to cut and steam them, but the cutting alone can not make them any more digestible or nutritious.

This matter of cutting the coarse material which goes into the manure is important. Mr. Mechi, the great English farmer, who is very successful pecuniarily, and wrote that instructive book, "How to Farm Profitably," cuts all the straw and coarse litter used for bedding in his stables, and finds it a profitable practice, as do many others who have followed his example. The resulting manure is easy to handle, being fine and friable, and mixes well in the compost, thus decomposing more readily.

A Mill for Crushing Bones.

To save the expense of a purchased bone-mill, one may be made as described below, which will crush them into a condition much more valuable for manure than the whole bones, if not quite as good as if finely ground. Make a circular mould of boards, 6 feet wide and 2 feet deep. Hoops of broad band-iron are fitted to the inside of the mould, and secured to it about one inch apart. The mould is then filled with a concrete of Portland cement, sand, and broken stone (the method of making is described in the *American Agriculturist* for December, 1874). Place in the concrete when filling, binding pieces of flat bar-iron shaped as in fig. 2, to prevent the mass from cracking when in use. In the center, place squares of band-iron, as a lining for a shaft by which the crusher is turned. When the concrete is set and hardened, the frame may be taken apart; and, as in setting the concrete will expand somewhat, the iron bands around the mass will be found to have become a tight solid facing to the wheel. The wheel is then set up on edge, and a square shaft of yellow pine, 6 inches thick, is wedged into the central space. This shaft is fitted to an upright post by a loose band of iron and a swivel joint, so that the wheel may be made to revolve around it. Any other suitable connection may be used for this purpose. A hollow trough of broken stone and well rammed concrete is then laid in the track of the wheel as it revolves, and the crusher is complete and ready for a pair of horses to be attached to it, see fig. 1. A crusher of this kind may be put up at a country mill or as a joint affair by a few farmers uniting their efforts, and thus utilizing a valuable fertilizing material, which is now wasted for want of means to render it available.

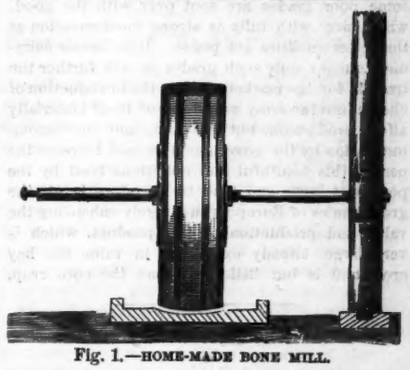


Fig. 1.—HOME-MADE BONE MILL.

Cheese in the Army.

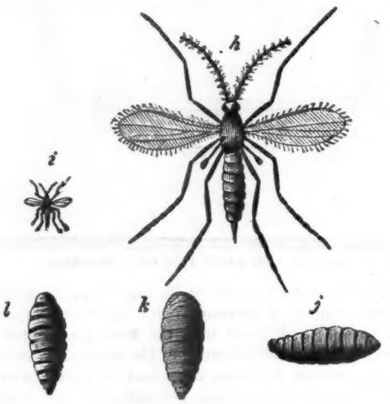
The efforts of ex-Governor Seymour to introduce cheese into the army as a regular ration, are likely to prove successful, as a special commission has given the subject favorable consideration. Samples have been ordered with which to test the question in its various lights, and the prospects are all in favor of the cheese, save the element of cost, which, when viewed in its true light, will not be found a difficult objection to overcome. If the War Department can find a grade of good cheese that will keep a long time under the various changes of climate to which it would be subjected, and can be had at a price which will not raise the cost of the regular ration, it is probable that it will be adopted. The present rations for the soldiers of the U. S. Army on the march, are chiefly canned corned beef and beans, ready cooked. An experiment was recently made on the plains, substituting cheese for the beans every other day; the soldiers liked the cheese, but wanted the beans as well. Beans are very nourishing, but also have bulk, which is necessary to the soldier, who is a very hearty eater. Beans cost only four cents a pound, baked, ready to eat, while cheese costs eight or nine. To overcome this objection it is proposed to include corn-meal in the ration, which is bulky, nutritious, cheap,

and relished by soldiers. Cheese, being a very concentrated food, requires some bulky material, like corn-bread, for example, to be mixed with it in order to render it digestible; it is then nearly or quite all assimilated, if properly made. On the other hand, cheese is an excellent addition and supplement to coarse and bulky food, making up its deficiencies in nutrition, and rendering it acceptable to the palate. The keeping quality is assured, as it is well known that cheese can be made that improves with age for a long time.

This question of foods for the army is a legitimate one for the Department of Agriculture to concern itself with, as it not only might lead to valuable results for the soldiers and the government, but also give people generally more knowledge on a class of most important subjects in regard to which a most lamentable ignorance now prevails, while at the same time helping agriculture by creating a demand for profitable products. Though the butter and cheese products of this country have increased about one-third during the past year, and the exportation in like ratio, the cheese product having been about 350,000,000 pounds, yet there is room for much greater increase. Our resources in this line are almost limitless, and we only need a demand to show our strength. The people of England and Scotland consume about 8 pounds of cheese per head annually, and our people only about 4 pounds, making our home consumption about 200,000,000 pounds, and the export 150,000,000 pounds. American cheese is considered superior to the average English cheese, by English people, though of course some poor grades are sent over with the good, which meet with fully as strong condemnation as the better qualities get praise. It is for our dairymen to make only such grades as will further the trade in foreign markets. Now the introduction of cheese into the army would not of itself materially affect production, but the fact, and the recommendation by the government, would increase the use of this healthful and nutritious food by the people at large, and tend to introduce it into the great armies of Europe, thus largely enhancing the value and production of this product, which is very large, already exceeding in value the hay crop, and is but little less than the corn crop.

The Hessian Fly.

Inquiries come respecting one of the oldest of our insect pests, the Hessian Fly. Indeed, we may regard it as our "Centennial Insect," for its mischievous work was first noticed in 1776, and it is said, though the matter is controverted, to have been brought to this country in some straw by the Hessian troops. However this may be, the name Hessian is firmly attached to it. This insect was one of the causes of the general abandonment of the wheat crop in the older States, and now that wheat culture is being resumed in many localities where this grain has been but little grown for many years, there is a renewed interest in the enemies of the crop. By the aid of an engraving it will require but a brief description, to enable one to recognize the insect. Some speak of the Hessian Fly, or Midge, as if the two were names for the same thing. While they are closely related insects, the ravages of the midge are confined to the head of wheat, and the other always attack the stems. Our present purpose is with the Hessian Fly. This was first described by Say, 60 years ago, who called it *Cecidomya destructor*. The first or generic name is from the Greek words for *excrescence* and *insect*, as some of them produce small galls, or excrescences; the specific name expresses its destructive character. The engraving shows the perfect insect, of the natural size, at *i*, its spread of wings being about ¼ inch; at *h* is the same magnified six times. The head feelers and thorax, or upper half of the insect, are black, the hinder part of the body is tawny, the wings are blackish, or dusky, and the legs are pale red or brownish, with black feet. There are two broods of the insect each year; the eggs are laid upon the leaves of the young wheat in autumn, usually in September. The insects soon hatch, make their way down between the sheath and the stalk, to a joint, where they remain, sucking away at the juices of the plant, while their bodies become imbedded in the soft and growing stem. As the stem of the wheat is very short at that time, the joints where the larva of the fly are at work are below the surface of the ground; when several of the maggots feed at one joint, they deprive the stem of so much nutriment that it soon weakens and dies. After feeding for five or six weeks, heads downwards, they are full grown, and appear as in *j* and *k;* they then pass into a dormant condition, and appear as in *l*, which is four times the real size. In this condition the maggots, from their size and color, are said to be in the "flax-seed state." From this it passes into the state of a chrysalis, or pupa, and in April or early May the perfect insect comes forth, ready to provide for a new brood. This spring brood find the fall-sown, as well as the spring



HESSIAN FLY.

wheat well advanced, and they do not lay their eggs upon the lower-most leaves; hence the maggots from these are found at the second and third joints. The maggots of this brood are in the flax-seed state about harvest time, and may be carried from place to place in the straw. This brood come out as perfect insects in time to lay their eggs upon the fall-sown crop. This is a brief history of the career of this great enemy to the wheat-grower. One or two of the maggots at the joint of a stem do not kill, but only weaken it, but where there are several, the upper portion of the stem dies. When an insect of any kind becomes very abundant, its natural enemies, especially parasites, increase also, and these are of essential aid in checking the increase of the Hessian Fly. Among the remedies in reach of the farmer are, a rotation of crops, late sowing, the selection of varieties with a hard, stiff stalk, and especially those which tiller abundantly, so that the damage by the late brood may be speedily repaired.

Inducements to Better Farming.

Agricultural Society Premiums.—A Change from the Routine Programme.

In the December number of the *American Agriculturist* mention was made of some special premiums offered by "A friend of Agriculture" for competition at the Orange County Fair. These premiums were so successful that the same gentleman renews them, with several important additions, chief among which is that of $30 for "the best managed farm." A little study of the text of these offers, will show a material departure from the usual method. That the new departure is an important and successful one, is indicated by the success of the first trial, though further experience is necessary to decide the merits of the plan for general adoption. These announcements are made now, in order that all may have a chance to begin working for them at once. The object of these premiums is not to make a fine show, but to improve the agriculture of the County, to the pecuniary benefit of every farmer who works for them. The care, and improved methods and means necessary to successful competition, are the same that lead to success and profit in the business itself. The money prizes to be won at the fair are small in comparison with the advantages to be gained by reason of the improved methods adopted in working for them, and the consequent improvement in the future farm practice. The offers give special attention to those features of the agriculture of the County that are, or might well be, most prominent, or are in greatest need of improvement, and are so worded as to induce the best methods in the particular branches to which they refer. The premiums are to be awarded at the next Annual Fair, unless otherwise provided, and are open to competition only by the farmers of Orange County.

First, Second, and Third.—For the improvement of milch cows, that the "Orange County milk" product may be enhanced in value. For the best herd of five (5) or more cows of the Dutch or "Holstein" breed exhibited by the owner, $7.00. For the second best ditto, $3.00....For the best herd of five (5) or more cows of the Ayrshire breed exhibited by the owner, $7.00. For the second best ditto, $3.00....For the best herd of five (5) or more native or grade cows exhibited by the owner, $7.00. For the second best ditto, $3.00.—Records of the milk yields of each of these animals for one year, or commencing at the dropping of the last calf, must be posted on each pen. Affidavits to be furnished if desired. Pedigrees of the Dutch cows and of the Ayrshires should also be furnished.

Fourth.—To aid in the improvement of the butter-dairy industry of the County. For the best herd of five (5) or more cows of any breed for the production of butter, $10.00.—The pedigrees of any pure blood animals are to accompany them; also the milk and butter record of each competing animal.

Fifth.—For the promotion of an industry which should occupy more of the attention of Orange County farmers, and which would add largely to the productive resources of the County. For the best flock of ten or more ewe sheep, accompanied by one male, $7.00. For the second best ditto, $3.00.—Particular attention to be paid to mutton qualities as well as wool bearing.

Sixth.—For the greatest profit realized on the production of pork, $5.00.—Each competitor for this premium shall exhibit two or more hogs of his stock, and shall present a sworn statement as to his methods of feeding and care, breed kept, and account of the cost of food and labor expended, and of the pork and pigs sold.

Seventh.—To encourage better methods of cultivation, and consequent larger yields of our leading bread grain. For the best acre of either spring or winter wheat harvested in 1879, $6.00. To the second best ditto, $3.00.—Competitors for this premium must exhibit one bushel of the average product of the field, and furnish a sworn statement of the yield, cost, and method of cultivation.

Eighth.—To encourage youth in the pursuit of profit and happiness in farm life. For the best collection of farm products grown and exhibited by any person under 20 years of age, $8.00. For the second best ditto, $4.00.

Ninth.—To stimulate the production and use of better varieties of fruits, and of garden and field products. For best collection of fruits, vegetables and grains, grown and exhibited by one man, $10.00.

Tenth.—To create a spirit of friendly emulation, which shall result in better farm management. For the best managed farm in Orange County, $50.00.—Entries for this premium must be made on or before the first of April, 1879, with the Secretary of the Orange County Agricultural Society. An Examining Committee of seven members shall be appointed by the Society, and consist of parties not entering for the premiums or residing in the same town where any of the competing farms are located. At least three of this committee shall visit each of the competing farms between the 15th of June and the 15th of July, and again in September. A written and sworn statement shall be furnished the Secretary of the Society on or before November 5th, 1879, as to the number, kind, and breed of all animals kept, of all implements, and manures and feed purchased, yield and cost of all farm products, and an account of all produce sold or on hand at the time of making the report. A report of the general plan of management and methods adopted is desired. In awarding this premium, the committee

shall take into consideration the amount of capital employed, the number of acres in the farm, and the profits gained; the object being to *honor the farm which is best managed as a farm.* To be awarded November 15th, 1879.

Eleventh.—To create a greater interest among farmers in the *adornment* of their homesteads. For the farm which shall show the neatest roadsides, the greatest neatness about the farm buildings, and the most tastefully arranged grounds and buildings, $20.00.—In awarding this premium, the committee shall take into consideration the fact that those improvements which are produced at the smallest cost, and without interference with farm work, are the most desirable. The use of native trees, shrubs and climbers, especially those indigenous to the locality, in adorning the farm grounds, will be considered by the committee, and other things being equal, preference will be given to the place where natives are employed rather than exotics.

Twelveth.—For the best essay on the past, present, and future of "Orange County Farming," $20.00. For the second best ditto, $10.00.—These essays should have special reference to the *needs* and *development* of the farm interests of the County. Essays to be sent to the Secretary of the Society on or before the 15th day of September, 1879, without a signature, but accompanied by a sealed envelope containing the name of the writer and title of the article. The prizes to be awarded by a committee of three appointed by the Society, and the awards to be announced at the annual fair. The committee to have the right of rejecting any or all of the essays offered, and the liberty of publishing any or all of them in the county papers, or otherwise.

We publish these special premium offers in full, as they contain some suggestive ideas that perhaps may be useful in other sections, both to the officers of agricultural societies themselves, and to other generous men of wealth who, like the donor of these premiums, may desire to benefit agriculture.

A Simple System of Farm Accounts.

SECOND PAPER.

A small ledger is necessary, ruled with double money-columns, paged and indexed. A convenient plan is to give 10 to 20 pages to each account, so that it can be carried on for a year or two without being transferred to a distant page. A few accounts only will be needed in ordinary cases. These will be as follows: A general farm or stock account; an account for each field, "Field No. 1," "Field No. 2," and so on; a dairy account; one each for sheep, pigs, poultry, grain, hay, and fodder (the last three may be kept together), general expenses, labor, and house expenses. If others are needed for special cases, they can easily be added; but a complicity of accounts will confuse those not used to book-keeping. To begin, an inventory of stock should be taken, and no other time is better for this purpose than the end or the beginning of a year. The inventory should include everything—land, tools, and stock of all kinds, and these should be valued at what they are worth or have cost. For example, the first inventory may run in this way:

65 acres of land cost	$6,500
3 horses	375
14 cows	800
7 yearlings and calves	120
2 Berkshire pigs	45
124 head of poultry	62
1 mowing-machine	90

and so on, enumerating every article, great and small, on the farm, including the amount spent for crops in the ground. The total amount is then entered to the General Farm Account in the debtor (Dr.) or left hand column of the ledger, as follows:

GENERAL FARM ACCOUNT.

1878			Dr.		Cr.	
Jan.	1	To value of land and stock	$9,275	88		

Each item is also entered in its own special account on the Dr. side, each being charged with the cost of what appertains to it. Then the general account will be the total of all the balances of each yearly settlement, and will show the exact condition of affairs at such settlement. For those who understand "double entry," it is easy to practice without using a journal—each entry—that is charged to any one account, always having its corresponding credit in the other appropriate account. For example, when 20 bushels of corn, oats, or feed are ground, or a stack of hay is used for the cows, the Dairy account would be charged with the value of the grain and hay, and the feed account would be credited with the same. Previously the Feed account would have been charged with the value of the grain, hay, etc., when harvested, and the fields from which these had been gathered would have been credited with it at the cost price. Thus each account would represent the business of the year in that particular. If this is done carefully, and without error, at the end of the year the sum of the balances of the accounts should be exactly the same as the sum of the general farm account at the beginning of the year. A specimen account is given:

DAIRY ACCOUNT.

1878.			Dr.		Cr.	
Jan.	1	Value of 14 cows	$800			
	31	4 tons of hay used	48			
		40 bushels of grain ground	16	80		
Feb.	7	2 tons of bran, and freight	24	75		
		One pit mangels, 400 bushels	20	00		
	28	Two months' milk sold			$244	80
		48 lbs. butter			12	00
		2 months' wages, dairyman	60	00		

Here are the items in corresponding accounts:

GRAIN AND HAY ACCOUNT.

1878.			Dr.		Cr.	
Jan.	1	Stock on hand	$640			
	31	Hay used for dairy			$48	00
		Grain for dairy			16	80

CASH ACCOUNT.

1878.			Dr.		Cr.	
		Balance cash on hand	$122	40		
Feb.	7	Cash paid for bran			$24	75
	28	J. M., 2 mos. wages			60	00
		Cash for milk	244	80		
		do. butter	12	00		

FIELD NO. 1.

1878.			Dr.		Cr.	
Jan.	1	To 2,848 bus. roots on hand	$142	40		
Feb.	7	By 400 bus. for cows			20	00

The balance of each account, the cash account, as well, at any time, should show the amount or the value of the stock on hand; so that it can be seen each month how matters stand with every department. The full account for "Field No. 1" is given below as a specimen:

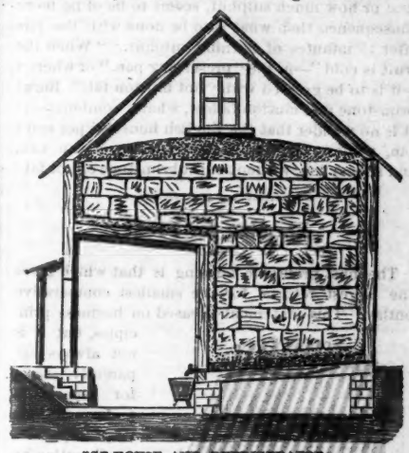
FIELD NO. 1.

1877.			Dr.		Cr.	
May	4	Plowing 3 acres	$6	00		
	10	1,800 lbs. mangel manure	100	80		
		12 lbs. seed	9	00		
	12	Harrowing and sowing	3	50		
June	10	6 days' weeding	6	00		
	12	1 day cultivating	2	00		
July	1	8 days' weeding	8	00		
	7	1½ day cultivating	3	00		
	22	1 day cultivating	2	00		
Oct.	30	4 days' pulling roots	4	00		
Nov.	10	8 days' pulling and pitting	9	75		
		Sundry expenses	9	95		
		Dairy account, 432 bushels			$21	60
Dec.	31	2,848 bushels in pits			142	40
			$164	00	$164	00

The item $142.40 is carried on as the balance to begin the account for the new year, and also figures as so much stock on hand in the general farm account. It is seen by this account that the roots cost nearly 5 cents per bushel; the $9.95 includes little unimportant items not easily entered in detail. Just as in business, the small sums which go, a few cents at a time, are lumped in a "petty cash account." Or this amount may be entered as profit, and carried to a "profit and loss" account.

A Capacious Refrigerator.

A large cool room is often greatly needed on the farm, when neither a cellar or a double-walled dairy house will serve the purpose. An Illinois subscriber sends a sketch of an ice-house, with a room in one side, that will answer this purpose. Similarly arranged ice-houses are not uncommon in some sections, and have been figured in the *American Agriculturist.* The engraving represents a section of the building, with a room partitioned off in such a manner that it has ice on three sides and the top, and its floor is below the surface a few feet, in order to take advantage of the coolness of the earth. The double wall of the ice-house extends in front of the open room, and the door is protected by a porch. A shallow cellar under the floor of the ice-house admits ventilation by the passage of cool air under the ice, and thence off through a flue. The

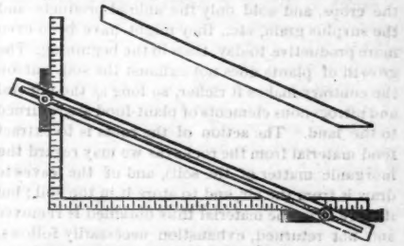


ICE-HOUSE AND REFRIGERATOR.

floor and the ceiling of the room slope, to secure drainage, as shown. An ice-house constructed in this manner provides a room that may be used for setting milk, or for cooling and keeping milk for sending to market; for storing butter, meats, etc.

Measuring and Marking Rafters.

The difficulties of fitting rafters may be overcome by the following simple means: Take a strip of wood 2 inches wide, 24 to 30 inches long, and 1 inch thick; saw a slit in the center a quarter of an inch wide, as shown in the engraving; mark the inches and other divisions of the scale upon each edge. Make two strips of brass or steel 1 inch wide and 1/16 thick, and 6 inches or more in length. Connect these to the long strip by means of thumb screws. To use the gauge, lay it upon a square, as shown, with the zero (0) of the scale on the figure of the long arm of the square which shows half the width of the building in feet; and place the edge of the gauge upon the figure of the short arm of the square, which marks the pitch of the roof. Thus, for a building 28 feet wide, and with a roof pitch of 10 feet, the 0 should come on the long arm and the edge of the gauge meet 10 on the short arm. The figures on the gauge will mark the length, 17



APPARATUS FOR MEASURING RAFTERS.

ft. 3 in., of the top side of the rafter. Then by tightening the thumb screws, and fixing the metal guides even with the arms of the square, the bevel of the ends of the rafter will be given. A rafter cut according to the gauge is represented at the top of the illustration. The projection of the rafter beyond the eave of the roof is to be added to the above length. This simple apparatus will enable any one handy with tools to cut rafters of the proper length and shape, and it will also facilitate the operations of an experienced workman.

Canning Fruit in England.—A correspondent of the "Journal of Horticulture," (London) says: "For Gooseberries, Currants, Damsons, etc., to each 3 lbs. of fruit, add 1 lb. of loaf sugar, and one teacup of water to each pound of fruit. Put all in a preserving pan and let the ingredients come to the boiling point. Have ready jars in which sul-

phur has been burned for 15 minutes. When the fruit is cold, pour on the top some hot mutton fat, then tie down with bladders."—Notice the definitiveness of this.—You must have jars ready in which "sulphur is burned for 15 minutes."—How big the jars, or how much sulphur, seems to be of no more consequence than what is to be done with the jars after 15 minutes of burning sulphur. "When the fruit is cold"—in the "preserving pan," or where?—it is to be greased with "hot mutton fat." Burnt brimstone and mutton tallow, what a combination! It is no wonder that the English housekeeper can't can, while every American housekeeper can can, and so easy too, without burnt brimstone or hot fat!

Farming for Profit.

The most profitable farming is that which gives the largest returns for the smallest comparative outlay. This statement is based on business principles, but it is not always apparently true, for sometimes a farmer gets large crops with small outlay by the use of means which draw heavily upon the reserve forces of the soil. The latter should be reckoned into the expense account, but usually is not, though if such a course is continued, it results in exhaustion. To revise the first statement then: that kind of farming is most profitable which gives the largest returns for the expense incurred, without decreasing one's capital by exhausting the soil.

Fig. 1. TABLE FOR DRESSING PORK.

English agriculture dates its rise from the beginning of the fattening of animals for market. The most fertile farms in the Eastern States to-day, are, as a rule, those that are devoted to stock and dairy-farming. The production and sale of large crops of grain, potatoes, and other field crops, without any return of fertility, has caused the present sterility of the many thousand acres of comparatively exhausted farm lands, West, South, and East. If their owners had kept live stock for the consumption of the crops, and sold only the animal products and the surplus grain, etc., they might have been even more productive to-day, than in the beginning. The growth of plants does not exhaust the soil, but on the contrary makes it richer, so long as the mineral and nitrogenous elements of plant-food are returned to the land. The action of the roots is to extract food material from the rocks (as we may regard the inorganic matter of the soil), and of the leaves to draw it from the air, and to store it in the soil; but if more than the material thus obtained is removed and not returned, exhaustion necessarily follows.

By feeding crops to animals, the larger portion of the essential mineral and nitrogenous portions are returned to the soil in the resulting manure; particularly is this the case in fattening mature animals, and in the production of butter and pork. An animal extracts from its food, nitrogen for its muscles, phosphate for its bones, some potash, and the vegetable oils and other carbonaceous matter for its fatty tissues and for respiration. The nitrogen, phosphates and potash, we must supply to the soil, as plants seldom obtain these materials from natural sources so rapidly as we remove them in crops sold; the material for oils, sugar, starch, and other carbonaceous matters are furnished to the plants from air and soil in ample quantities to meet all demands. Now, a growing animal stores up the first three of these food materials. A mature animal, on the contrary, only uses enough of them to make good the wastes of the body, but these wastes are all found in the excrements; so that practically a fattening animal removes *none* of those constituents of its food that are valuable for manure. We can, therefore, feed the home-grown crops and purchased food to mature animals, and get nearly or quite its full value twice over, in beef and in manure for the production of more crops.

Similar principles apply in feeding swine. Pork is for the most part composed of the fatty matter which costs nothing in the crop. Hence the value of hog-manure, with which every farmer is familiar. In butter-making also, very little if any fertility is removed from the farm in the butter sold, as it is composed wholly of fatty compounds. This fact is illustrated in practice by the exceptional fertility of butter dairy farms, which, instead of becoming sterile are continually growing more fertile. These facts indicate that the profitable farming of the future in many sections, is to be, as it is to-day, in increased attention to fattening animals and dairying.

Hog-Killing Implements—Ringing.

While on the farm of J. W. Morrison, in Orange County, N. Y., not long ago, we saw some convenient and ingenious appliances, that would be useful elsewhere. Mr. M. makes butter from about 20 cows, churning the whole milk, and feeding the butter-milk to his swine. In his piggery is a room for slaughtering. The stout table on which the dead porkers are lain to be scraped and dressed after being scalded, is made with its top curving about four inches in a width of four feet, and consisting of strips of oak plank, as represented in figure 1. This curved top conforms to the form of the carcass, and holds it in any desired position better than a flat surface. For scrapers, old-fashioned iron candle-sticks are used; the curved and sufficiently sharp edges at either end serving as well as a scraper made for the purpose, and its small end has an advantage over the latter for working about the eyes and other sharp depressions, (see fig. 2). A cleaver for use in cutting up the pork is shown in fig. 3; it has a 13-inch blade, 3 inches wide at the widest part, and ¼ inch thick at the back. This is a convenient implement, easily and cheaply made by a good blacksmith, if it can not be had at the stores; any mechanic can put on the wooden handle.

Fig. 2.

In figure 4, is represented Mr. M.'s home-made hog-ringing apparatus. His blacksmith makes an instrument resembling a horse-shoe nail, of good iron, about 3 inches long, 3/16th of an inch wide, and 1/32d of an inch thick, tapering to a point; the "head" is merely the broad flat end curled up. Just before using, this needle-like instrument has its corners rubbed off on a file; it then is easily pushed through the septum of the pig's nose.

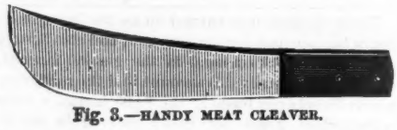


Fig. 3.—HANDY MEAT CLEAVER.

A key with its tongue broken off and a slot filed in the end, is used to curl up the projecting end, and the ringing is done. The "rings" cost about 75 cts. a hundred, are effective and easily applied.

Exportation of Live Animals.

The following is the text of that portion of a bill recently passed in the British Parliament relating to the importation of animals, which concerns the interests of American cattle breeders and exporters:

1. Foreign animals are to be landed only at a part of a port defined for that purpose by a special order of council, called a foreign animals wharf.

2. They are to be landed in such manner, at such times, and subject to such supervision and control, as the Commissioners of Customs from time to time direct.

3. *They are not to be moved alive out of the wharf.*

"This law is to go into effect on the first day of January, and is to include all foreign cattle, except (1) those from the Isle of Man and the Channel Islands; (2) those intended for exhibition or for other exceptional purposes; and (3) those, the landing of which is for the time being prohibited by order of council.

"In relation to the foreign animals, if, and as long as, from time to time, the Privy Council are satisfied, with respect to any foreign country, that the laws thereof relating to the importation and exportation of animals, and to the prevention of the introduction and spreading of disease, and the general sanitary condition of animals therein, are such as to afford reasonable security against the importation therefrom of diseased animals, then, from time to time, the Privy Council, by general or special orders, shall allow animals, or any specified kind of animals, brought from that country, to be landed, without being subject under the provisions of this schedule, to slaughter or to quarantine, and may for that purpose alter or add to these provisions, as the case may require; but every such order shall forthwith, after the making thereof, if Parliament is then sitting, and if not then, forthwith after the next meeting of Parliament, be laid before both houses of Parliament."

The bill is apparently a necessity, to protect English herds from imported diseases, which have caused immense losses. We understand that the British Government has called on our Government for a statement as to the provisions against the spread of and protection from disease in this country. If the truth be told, a lamentable condition of veterinary science will be shown up, that we hope will rouse the Government and people to remedy the evil. One evident result of this law will be to increase the foreign exportation of dead meat.

Fig. 4.—HOG-RINGER AND KEY.

Keeping Poultry in Cities.

"D.," Springfield, Mass., sends to the *American Agriculturist* his poultry account for two years, to show that fowls can be profitably kept in a city:

Nov. 1, 1876.—*Dr.*	
Material for house	$7.00
Paid cash for 10 fowls	5.00
Paid cash for Leghorn eggs for setting	75
Paid cash for feed for one year	15.22
	$27.97
Cr.	
74½ doz. eggs, @ 25c	$18.62
36½ lbs. meat, @ 18c	6.52
14 Brown Leghorns, @ 60c	8.40
13 Brown Leghorns, @ 50c	6.50
House	6.00
	$46.04
Nov. 1, 1877.—*Dr.*	
House	$6.00
14 Brown Leghorns, @ 60c	8.40
13 fowls, @ 50c	6.50
Feed, one year	16.17
	$37.07
Cr.	
164½ doz. eggs, @ 23c	$37.79
74½ lbs. meat, @ 16c	11.92
17 Brown Leghorns, @ 60c	10.20
6 Plymouth Rocks, @ 60c	3.60
5 chickens, @ 30c	1.50
House	5.00
	$70.01

My hen house is charged for cost of material only, doing the work myself. Its dimensions are 4 feet by 6; 5 feet high on sides, 7 feet in center; the run is 30 feet by 4 feet, of which 15 feet is covered in the winter. House and run face the south. The fowls are confined when they would interfere with the garden, except letting them out on a vacant lot near sun-down. I have 22 fowls in the house now, the balance in a dry goods case used for raising chickens. I kept an average of 17 through last winter. These accommodations seem small for the number of fowls, but they thrive and are healthy; have lost three in the two years, from accident. I screen coal ashes over their droppings nearly every morning, and clean out often. I think this is the secret of their healthiness. The fowls kept last year were Brown Leghorns, and three Buff Cochins for mothers. For feed, I give them in the morning corn-meal and wheat middlings, equal bulk, in winter mixed with warm water; afternoon, wheat, buckwheat, table-scraps, oats, etc., changed often.

A New Pear—Kieffer's Hybrid.

"I have something new to show you," said Mr. C. H. Miller, the most efficient Chief of the Horticultural Department of the Centennial Exhibition, on one of the bright September mornings of that wonderful autumn of our Centennial year. The remark was accompanied by the presentation of several pears from a basket at hand. It *was* "something new;" though tolerably familiar with pears, this was quite unlike any other that we had ever seen. There was something about its appearance, and its texture, as indicated by the feeling of the fruit when handled, that indicated a difference between that and other pears—nor did this individuality disappear upon testing; the character of the flesh and its flavor were quite peculiar, and not to be compared with any other pear that could be called to mind. We learned from Mr. Miller that the fruit was from an accidental seedling at Germantown, Pa., upon an old place where there were trees of the Chinese Sand Pear (*Pyrus Sinensis*), more frequently cultivated 20 or 30 years ago as an ornamental tree, than it is at present. As trees of the Bartlett grew near by, it was supposed—and the character of the fruit favors the supposition—that hybridization had taken place, with this fruit as the result. A few days ago, there came from Mr. William Parry, the well-known fruit-grower of Cinnaminson, N. J., a circular describing his novelties for 1879, and there in engraving and colored plate, was our centennial pear. It appears that Mr. Parry secured the original tree, and has called the new variety "Kieffer's Hybrid." In his circular he gives an account of the origin of the fruit essentially as stated above, and presents it as a variety to be commended, especially for its hardiness and productiveness. The engraving shows the average size and shape, the fruit being very uniform in both these respects; its skin, which is of a bright, peculiarly rich yellow, has a texture that, in handling, conveys the impression of hardiness. In his published description, Mr. Parry says: "flesh white, buttery, and juicy; quality good." In a private letter he says that he ranks the pear as "simply good, about equal to the Duchesse d'Angouleme." In this we think he does what is unusual with introducers of new fruits, i. e., under estimates its quality. Our recollection is, that it has a refreshing briskness that the Duchesse has not. The fruit, while it may not come up to the high standard of "best," is of sufficiently good quality to be acceptable to those who esteem the Bartlett, which, while regarded as second or third rate by critical amateurs, meets the general taste, and every candidate for popular favor must stand a comparison with that best known of all our pears. We have not in a long time seen a fruit that appeared to unite so many elements of popularity as "Kieffer's Hybrid," and shall be much disappointed if it does not prove to be a valuable and profitable market fruit. The tree is a strong and vigorous grower, bears early, is very productive, and apparently as free from disease as the Sand Pear, which is one of its parents. The fruit is of good size, of an attractive color, and keeps well, never decaying at the core. The original tree has been fruiting for about five years, and for the last two years has yielded four to five bushels each year. The Centennial Fruit Committee gave it a Prize Medal and Certificate as introducing "a new race of great excellence," and at the 50th Annual Exhibition of the Penna. Horticulural Society held last Sept., it received "honorable mention." Mr. Parry shows his faith in its future as a market fruit by setting out an orchard of 350 trees of this variety. Of course, like all new varieties, this has to endure the test of cultivation in a variety of soils and locations, and we are glad to know that Mr. Parry has already placed it on trial with various pomologists of experience in localities widely separate. We shall be disappointed if the result does not show that its popular qualities have not been over-estimated.

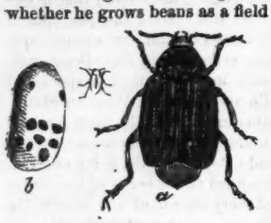
A NEW PEAR—KIEFFER'S HYBRID.

The Bean Weevil.

The Pea Weevil is now so common that the localities where sound seed peas can be raised are yearly growing fewer. The Bean Weevil, scarcely known 20 years ago, except in the cabinets of entomologists, has increased with great rapidity, and it will soon be difficult to find a locality where seed beans can be raised free from this insect, and what is of more importance, it threatens to make the bean crop a very uncertain one. The "American Entomologist" Feb., 1870, speaks of the insect as new, "within the last five years." The first specimens were received by us in the autumn of 1862, these two data enable us to fix very nearly the time at which the insect began to be noticed. At first it was supposed to be the same as the Pea Weevil, and it was asserted that it was an European insect imported and distributed by the Department of Agriculture. But entomologists discovered that it was not the same *Bruchus* that infests the pea, that it was not an imported insect at all, but a native species described many years ago by Say, (*Bruchus obsoletus*), who found it in the seeds of a species of *Astragalus*, or Milk-vetch, of the Western States. Here we have another example of the rapid increase of a native insect under favoring conditions, the too well known Colorado Potato Beetle, being another. So long as it was confined to the seeds of the *Astragalus*, which is not very abundant any where, the insect was little known, even to entomologists, but when bean fields came to its native localities, it had at once food enough to favor rapid propagation, while it met with conditions for disseminating it far and wide. The Astragulus seeds spread only in the natural way; birds and other animals might carry them for short distances, but so long as the insect fed only upon that, it occupied a restricted area. On the other hand, when once established upon the bean, it not only had abundant food, but, so to speak, it had at command every means of transportation, beans being an article of commerce; wherever these were sent, whether for food or for seed, the insect was carried, and it appears in widely separated parts of the country in a few years.

The engraving, (see next page), from Riley's "Insects of Missouri," shows the insect of the natural size, and magnified, and also an infested bean. As the characters which distinguish this from the Pea Weevil are of interest to entomologists only, we need not give them. So far as known, the two insects confine themselves to their respective seeds. In the pea we find but one insect to a seed, while in the bean there are usually several, as many as 12 having been noticed. It is supposed that, like the Pea Weevil, the mother insect deposits her eggs upon or in the pod while it is very young and tender; the young larvæ find their way into the seeds, where they make their growth, feeding upon the contents of the bean, and before they pass into the pupa state, cut quite to the seed-coat or skin of the bean, thus forming those semi-transparent, perfectly circular dots, noticeable in the infested seed. When the beetle is ready to come out, it has only to break away this thin covering of skin. Some of the perfect insects appear in the fall, or during the winter, and of course perish, but enough remain until spring to carry on the work. The practical question—and it has become an important one—is, how to get rid of the insects. If all would agree to plant no imperfect seed, that would help, but would not be enough. Every bean containing a weevil should be destroyed, otherwise the insects will escape and find their way to the field or garden and continue the evil. Much damage has been done to the pea crop, and the insect infesting that is much more widely disseminated than it would have been, by the assertion that the presence of the weevil did not injure the value of the peas for seed, as it never destroyed the "chit," as the plumule or growing point is popularly called. This statement, repeated in journals and books, put people off their guard, and buggy peas have been sown until there are few localities where lovers of green peas do not eat their share of "worms." But the fact is, as the experiments of Mr. Peter Henderson plainly show, that while the Pea Weevil does not *destroy* its germinating power, it does injure the seed. The larva of the weevil eats up a large share of the food intended for the young pea; though the seeds do germinate, the young plants—robbed of half or more of the food provided for them—are puny and starved, and thus deprived of nourishment when they were young and most need it, are in all their after life less vigorous and less productive than similar plants from sound seed. In the bean a still greater share of the food

for the young plant is destroyed, and the fact that in spite of the insects some of the seed may come up, should not induce any one to use weevil infested seed. A great evil is impending, and every one, whether he grows beans as a field crop, or as a garden crop, should begin to arrest it before the matter gets beyond control. Whatever the present trouble and cost, sow only perfectly sound seeds, and burn, or feed out at once—long before spring—any that show the presence of insects, and, what is of quite as much importance, talk over the matter with your neighbors, and induce them to do the same. In such matters as these the necessity for combined effort becomes manifest, and in producing united action, Farmers' Clubs, Village Associations, or by whatever name such assemblages of farmers and rural people may be called, find their best work.



BEAN WEEVIL.

The Calycanthus, or Sweet-Scented Shrub, As a Cattle Poison.

The Sweet-Scented shrub, often abbreviated to "Shrub," also called "Carolina Allspice," is one of the oldest and best known plants in cultivation. Its dark maroon-colored flowers have an exquisite fruity fragrance that makes the shrub universally popular. There are two or three species and several varieties of *Calycanthus*, found wild from Virginia southward, and one is peculiar to the Pacific Coast. The best known species and the one most cultivated is *Calycanthus floridus*, the seeds of which, a very intelligent correspondent in the mountains of Southern Tennessee informs us, are poisonous to both cattle and sheep with often fatal results. This is to us a perfectly new feature of the *Calycanthus*, and also entirely new to us as a poison to our domestic animals. Our correspondent is quite familiar with the plant, is engaged in an occupation that leads to exactness, and we can not question the accuracy of his statement. The most that has been claimed for the shrub is, that its bark is a useful tonic. Doct. Porcher, in his excellent work, "The Resources of the Southern Fields and Forests," makes no mention of the poisonous quality of the seeds, but in his remark "The seeds seldom mature," puts us on a new track, and in following up the matter of seeds, we find in Torrey and Gray's Flora of North America, Vol. 1, at the end of the description of the varieties of *C. floridus*: "They are said seldom to ripen their fruit in their native situations." Besides these, Nuttall in his Genera, 1818, speaks in illustration of a botanical point, of "the rarity of fruit in the *Calycanthus*, even in its native mountains." This testimony as to the rarity of the seed is interesting, as it explains why we have heard so little of its poisonous character; but our correspondent, living where, from some cause, the seed is abundant, has had an opportunity to observe its deleterious effects. This matter of cattle poisons among our native plants is not only interesting, but one of great practical importance. It would appear, from our present knowledge, that while the seeds of *Calycanthus floridus* are positively deleterious to animals, they are produced so rarely that their effect are not generally manifest; but in some localities, as in the mountains of Southern Tennessee, the seeds are abundant and their fatal effects are well known. We shall be glad of further testimony on this point, especially whether the species of the Pacific Coast, which is quite abundant in the northern part of California, has similiar properties.

Clematis Pitcheri is one of our native plants that the Europeans are in a curious muddle about. Some time ago the "Revue Horticole" figured a Clematis, with small, scarlet flowers, and called it *Clematis Pitcheri*. One English journal called attention to the blunder and stated, as is true, that Pitcher's Clematis has much larger flowers of a dull purple color. Another London journal comes to the aid of the French periodical, and saying that it knows that *C. Pitcheri* has scarlet flowers, as its Editor saw the first one that flowered in England. The facts in the case are: there is a rather rare scarlet-flowered Clematis in Texas, which has been called *C. coccinea*, though some of our botanists think it is a variety of *C. Viorna*. Evidently this rare scarlet species has found its way to Europe, and some one has blundered in calling it *C. Pitcheri*.

A New Variegated Tea Rose—"American Banner."

BY PETER HENDERSON.

The most striking novelty that we have met with in our long experience with plants, is represented in the engraving. For the first time, so far as we can ascertain, we have obtained a Tea Rose distinctly striped with crimson and white, and at the same time retaining all the valuable qualities of its class—delicacy of color and texture, exquisite fragrance, and continuous bloom. We have long had striped varieties of the hardy garden roses, such as "York and Lancaster," etc., but these flower only once, and having but little merit are not generally known. This new variety originated in 1877 with George Cartwright, Esq., of Dedham, Mass., who states that this appeared as a "sport" upon the well known crimson Tea Rose—"Bon Silene." The leaf, from the axil of which the sporting shoot started, showed in one-half the leathery foliage of the "sport," while the other half had the foliage peculiar to "Bon Silene." We have frequently, in other plants, similar variations in the color of flowers; for example, it is quite common to find one shoot of *Hibiscus Rosa-Sinensis* bearing orange colored, and another having crimson flowers, but the foliage in such cases remains unchanged.

VARIEGATED TEA ROSE—"AMERICAN BANNER."

Again, we have Carnations bearing at one time on the same plant, both plain scarlet flowers, and those striped with scarlet and white. So with Dahlias, Verbenas, Petunias, and scores of other plants; but in all of these the flowers only vary, the foliage does not. In the case of this new striped Rose, the distinct change in foliage is to me more marvellous than even that in the flower. We have named this Rose "American Banner," as the colors are very nearly those of the stripes of our National flag. When a name can be to some extent descriptive also, it is always, we think, of advantage.

A New Quince—"The Champion."

When we consider the value of the quince, whether for home use or for market, we wonder at the little that has been done for its improvement. If we compare the older works on fruit with those of the present day, we find that but a single new variety has been added during the last half century. Under these circumstances we look upon a new comer with no little interest. We had heard of the Champion Quince, but had not seen it until Messrs. Bunnell & Perry, of Southport, Conn., sent us several specimens for examination and trial. The original tree is a seedling, which appeared in the grounds of Granville S. Perry, then a nurseryman at Georgetown, Ct., and attracted attention by its earliness of bearing and the uniformly large size of the fruit. It soon acquired a local reputation, and has since been placed in the trade. The fruit, as shown us, runs large, some specimens being 12 inches in circumference. In form it is intermediate between the well known Apple-shaped and Pear-shaped Quinces, though more like the former, and may be described as obscure pyriform, with the stem inserted at the base of a usually prominent lip, and inclined; the skin strongly russeted for a short distance around the stem. Calyx set in a remarkably deep and strongly corrugated basin. The skin of a lively yellow color. The fruit appears to keep well, as at the date of writing (December 2d) some specimens are still green. The flesh cooks very tender, and is of excellent quality. It is claimed that this bears earlier than any other variety.

The Pitcher Plant in the Parlor.

The Pitcher Plant, also called Side-Saddle Flower and Huntsman's Cup, and Whipporwill's Shoe, (*Sarracenia purpurea*) of our swamps, is probably known to every one who notices wild plants at all. Its gracefully formed tubular leaves holding water, make it sufficiently unlike other northern plants to attract the notice of the most indifferent. Not long ago, as we were coming to the city, we met a man with an enormous basket filled with the largest and finest clumps of the plant that we ever saw together, and learned, upon inquiry, that he sold them "uptown," at the ridiculously low price of 10c. a plant. Only ten cents! It would not be possible to get anything from the tropical collection of hot-houses more intrinsically fine for $10. But then they are "common," any one can get them; and worse than all that, they grow wild. We know that these are to some, great faults in a plant, but we have worked to little purpose these many years, if we have not convinced some, at least, of our readers, that there are many wild plants worthy of a place in the garden, and here now is one that may claim a place in the parlor. Get a fine, large clump of the Pitcher Plant, and bring home some bog moss with it. Then select a dish or vase of some kind, if nothing better is at hand, a small bowl, but it will honor and dignify the choicest in the house. Set out the plant, using moss instead of earth for the roots, keep the moss wet, and the plant will remain fresh and bright all winter, and may even produce its curious flowers. It does better in a moderately heated room, and now and then should have a good showering to free it from dust. Those who can appreciate beauty of form, will find pleasure in the graceful curves of its outlines, and those who are fond of such speculations, can wonder why that particular plant was made in that particular shape....We are quite amused at the odd ways of the English horticulturists with this plant. Every now and then we are told that *Sarracenia purpurea* passed the winter at some place without protection,

and a recent writer in the "Gardener's Chronicle," tells us that it "can be grown in a cold frame, plunging the pots in winter, or it will succeed out of doors when a suitable position is found for it." All that the plant needs in England, is a swampy or marshy place; as its native range extends to the British Possessions around Hudson's Bay, it can not need protection in any part of England.

Raising Evergreens from Seed.

With the increasing interest in the cultivation of forest trees, many, the coming spring, will make their first attempt at raising trees from seed. Those especially who sow the seeds of evergreens (by which we mean the cone-bearing trees) will meet with disappointments and surprises, and it is well to point out some of these in advance. One great obstacle to success in growing forest trees of all kinds from seed, is, that the novice does not recognize the fact that trees, no matter how hardy and robust they may be at maturity, are, when young, the most delicate of plants. Just as man, the most helpful of all animals, is in infancy the most utterly helpless of all, so the most hardy trees are in their early years the most exacting in their demands for care and protection. Of the millions of nuts and other tree-seeds that are self-sown every year, how few ever produce a tree? If this matter be examined, it will be found that it is only where every favorable condition is present, and especially a friendly shade is afforded by some shrub or other plant, that one of the many bushels of acorns ever becomes an oak. The Giant Cereus of the arid plains of Arizona and Northern Mexico, with its single column and candelabra forms, give a feature to the landscape unlike that to be seen elsewhere; they are types of ruggedness, and stand 30 to 50 feet high, resisting for years the fierce wind-storms of that country. Every one of these plants annually sheds seeds enough to overstock the country and make it to bristle with the prickly monsters. Yet it is only when a seed happens to germinate at the base of a mezquit or other shrub that shall afford protection to and nurse the plant in its early years, that a Giant Cereus is produced. The English timber-growers early learned that they could not raise their plantations of oak without the aid of "nurse-trees," and in the treatises on timber-growing of half a century or more ago, we find much space given to the discussion of the different "nurse-trees," as of equal importance with the trees they are to protect. But to return to the evergreens. We may state that, as a general rule, it will be of little use to undertake to raise evergreens from seed, unless one can give them the proper care; and one of the most important items included under "care" is a sufficient shade and shelter. Evergreen seedlings are sold so cheaply by those who make a business of raising them, that unless one has the time and the taste for such work, it will be far better to buy the seedlings than to raise them. Still we would not discourage those who would make the attempt, as there are no difficulties that may not be overcome by one who will devote himself to it. The largest nursery for the production of forest tree seedlings is that of R. Douglas & Sons, Waukegan, Ill. Here one may see acres devoted to seed-beds, and all under cover. Crotched posts are set in the ground, poles laid from one to the other, and across the poles is laid brush to make a rude but sufficient covering. This shelter, if we recollect rightly, is about 7 feet above the beds, at any rate high enough for men and a small horse or mule to work beneath it. It is only since their operations have become so large that this elevated screen has been adopted. Those whose sowing is on a small scale, can use the lattice screen that has been noticed in former articles. This may be made of common plasterer's laths, nailed to stronger strips, the laths being their own width apart, and the screen of a length convenient for handling. The laths are four feet long, and this is a convenient width for the beds, which should be a few inches above the general surface, and may have a board set on edge at front and rear, to hold the screens. As success with evergreen seedlings largely depends upon getting an early growth, so that they may be well rooted before the summer drouths come on, all preparatory work should be done well beforehand, so that the seeds may go into the ground as soon as it thaws in spring. There are some peculiarities about young evergreens that are puzzling to those who have never raised them. In most kinds the seed-leaves are unlike those of ordinary trees or other plants. In other seedlings, where the seed-leaves appear above the surface, we are accustomed to see two of them, usually thick and fleshy, and unlike the proper leaves which follow. In most evergreens, especially the pines, the seed-leaves are in a whorl of four, six, or even twelve, giving the unusual appearance to the little plant shown in figure 1. But a still greater departure from the ordinary way of seedlings is found in the Arbor Vitæs, Junipers, Cedars, and some others, in which the early leaves of the young plant are quite unlike those proper to the tree. So different is the general aspect of the seedling from that of the older plant, that growers have supposed that they had been furnished with the wrong seeds. This difference in foliage is strikingly seen in the Red Cedar, where the young trees for several years produce only sharp, spreading, needle-like leaved foliage, and quite different from the short, scale-like leaves of the tree. It sometimes happens that a branch of an old tree of the Red Cedar, whether from injury or not, we cannot say, will produce these prickly leaves, and form a cluster that shows a marked contrast to the rest of the tree. This change from the foliage of the young plant to that of the mature one, sometimes takes place the first year, but often not until later. The engraving (fig. 2) shows a seedling of the Gigantic Arbor Vitæ (*Thuja gigantea*) of Oregon, in which the change from the long, spreading, prickly leaves to the scale-like form has already begun in the first year. In some varieties of our common Arbor Vitæ, the young form of the leaves is retained for many years. That known as Tom Thumb Arbor Vitæ, is very dwarf and rounded in form, and only rarely produces the scale-like leaves. There are other varieties of this, and also of the Chinese or Oriental Arbor Vitæ (*Biota*), with the same peculiarity, and the very variable Retinisporas also afford examples of the retention of this early form of foliage for many years. Ordinarily, however, "the foliage of infancy," as it has been called, soon gives place to the characteristic form peculiar to the species.

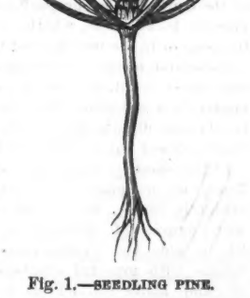


Fig. 1.—SEEDLING PINE.

Fig. 2.—SEEDLING OF GIGANTIC ARBOR VITÆ.

THE HOUSEHOLD.

☞ *For other Household Items see "Basket" pages.*

Home Topics.

BY FAITH ROCHESTER.

Dressing the Children "with Limited Means."

I don't know by experience just how it seems to set about the clothing of a family of children, with no regard to expense, but I *do* know what it is to feel that many garments must be supplied before the severest winter weather comes, when there is little money in the purse, and little material in the closets, and drawers, that is available. I know exactly how to sympathize with the burdened mother who cannot possibly see where the material for the clothing is to come from, or the time and strength for the necessary sewing. It is hard to keep up one's courage in such a pinch, and when deliverance comes in some unexpected way, what a relief it is! But I confess to a considerable pleasure in some of the inventions which the necessities of straightened means entail upon us, if the thing does not go too far, and cause actual suffering. The little garments pieced up by some combination method are sometimes quite pretty and satisfactory. The dresses wear out first around the bottom. A broad stripe of strong fabric that harmonizes well with the old dress, remedies this evil. At the same time the dress can be pieced down if too short, by letting the broad stripe come down below the old skirt, with a strong new calico or cambric lining. If the dress has been worn without a sleeved apron, the sleeves are worn out too. New ones can be made like the broad stripe around the bottom; or like the body of the dress, and trimmed with the stripe material. If one prefers to have the child wear high-necked, long-sleeved aprons, the broad trimming at the bottom, with a neat finish at the neck and waists of the same, makes the old dress practically into a new one. Or, low-necked, sleeveless aprons can be worn, of a pretty graceful pattern, which shows only the shoulders, sleeves, and bottom of the dress skirt. All these may be covered with the new material if desired. I make all our clothes with a view to economy in washing, for our washings are inevitably large, let me save as best I can. In winter I want to keep as clear as possible of calico dresses—such a mass of calico must be washed, starched and ironed when the front of the garment is soiled. Calico or gingham aprons should take all this, to be worn with worsted skirts. Table bibs, made of calico or gingham, of generous size, buttoned around the neck by a strap, save some washing of children's aprons, but they must be encouraged to keep the bibs clean, for the sake of establishing cleanly habits as early as may be.

Undersuits.

I saw an advertisement of Merino union undersuits for children, very cheap. I took the first opportunity to go in search of them, hoping to be saved some of my fall sewing. But the suits, unexceptionable in other respects, were made with short legs, the ribbed bottoms reaching only a trifle below the knee. It was worth something to see long sleeves provided, but why should the legs of children be left with less protection from the cold than the rest of the body? So I bought thick Shakers' flannel (much cheaper) to make suits covering the little bodies from wrists to ankles. They should be loose and easy in every part, with allowance for shrinkage and growth—though properly washed flannel need shrink but little, if any, and Shakers' flannel shrinks less than any other. I prefer to finish them without any cotton bindings or facings, because cotton washes harder than flannel

and needs extra rubbing. An edge crocheted with Shetland wool at the neck and wrists, makes a pretty finish. Woollen suits for small boys may be made just like those for girls. The legs should always slope by both outside and inside seams, from the calf of the leg down. Leave them open a few inches at the bottom of the inner seam, that they may lap smoothly under the stocking.

Children's Garters.

Children's stockings should not be fastened with elastic (or other) bands around the leg, as any band so applied interferes more or less with the circulation of the blood. Buttons should be sewed on the tops of the stockings, on the outer side of the leg, and elastic straps with button-holes at each end should fasten to these and to buttons on the under waists, under the arms. There are patent stocking-supporters much like this, only the strap forks above the knee and attaches to the stocking on the outside, and also on the inside of each stocking-leg. Home-made garters can be arranged the same way, but I find one fastening sufficient.

Outer Drawers.

Let us cling to that most sensible fashion of putting colored drawers upon our little girls in winter. White seems the proper color for under clothing, and it is that idea, I suppose, which has made white almost universal for children's drawers. But all well-dressed children now are supposed to wear under flannels (or cotton flannels) in winter, so that the white cotton drawers are no longer absolutely under garments. They are even worn, in many cases, over red or grey flannel. Nothing in my wash-tub on Mondays needs harder rubbing than these same white drawers around the hems or trimming. Some strong, inconspicuous colored woollen or worsted goods is the most sensible material, gathered into a band and buttoned around the leg below the knee, never leaving any gap between the drawers and woollen stockings. The dress skirt should be long enough to conceal these drawers when standing. They look well made of the same material as the dress, and are best lined. I do not pretend to say that these are the most sensible winter drawers that I can imagine for little girls. Warm trousers reaching to the tops of the boots, are most reasonable for little girls and little boys too, but children must not be made uncomfortably *odd*. Leggins must be added for out-door use, and for extra cold days in-doors. Outer drawers and petticoat should button to a strong gingham or colored drilling waist worn over the undersuit.

Advantages of "Plain Living."

There are many good reasons for living on plain, simply-cooked but nourishing food. Variety is necessary—that is, a judicious mingling of dishes of grains, vegetables, fruits, and meats. There need be but few kinds at one meal if the family are agreed in their tastes. The larger the family, as a general rule, the more need of variety at each meal that each one may follow natural instinct in selection, as far as can be done with due reference to the rights of others. Plain living reduces not only our expenses, but our labor in the kitchen. Another important thing I have been taught by both reason and experience: plain living reduces our liability to diseases of all kinds. As I said recently, there has been but one case of absolute sickness (down sick in bed, undressed all day) in our little family of four children during the more than dozen years since the eldest was born. I think this is due to care in regard to the general rule of health, as no preventive or curative medicines—not even Catnip-tea or Camphor—have been used. Yesterday a daughter complained of a slight sore throat—a very unusual complaint here—and I felt some little uneasiness, as diphtheria is abroad in this part of the country (six children from one family buried lately in a city not far away), and a few cases in our own place. But I felt condemned for the dinner of the day before—hot bread pancakes, upon which I knew that the little girl was eating quite too much butter in a melting condition, followed by pumpkin pie, which disgraced me because it was too sweet and spicy for health. She had the good sense (or the cultivated instinct) to go without supper last night, and a wet cloth on her throat during sleep, covered by a dry one, perfected a cure of all sore throat. I know a family whose mother always dreaded the coming of winter, because croup, diphtheria, sore throats, coughs, and other cold weather diseases so threatened her children, and worried or seriously alarmed her; and then dreaded hot weather on account of children's bowel diseases—until she learned to regulate their health by regulating their diet. A bountiful but *plain* bill of fare in exchange for the "richer" or more highly-seasoned food common among prosperous people, has changed all that. A healthier flock of children, and a more happy and hopeful mother is seldom found. She almost never makes cake now-a-days, and pies very seldom, and then very plain ones. Children who live habitually on plain fare, show evil effects from rich food much more quickly than those who live regularly on the latter, and some suppose this proves that their stomachs are weaker on account of plain living, but I think it is because they have a more correct or healthy tone, and it seems to me fortunate that the first deviation from health is so quickly reported, and thus there is little danger of serious disease.

A Pleasing Lamp Shade.

Not long ago we saw at a farm-house, where the mother had a happy tact of making much with simple means, a lamp shade, which had a richness of effect that one would hardly suppose possible from the very common materials entering into its make up. The shade was made of six pieces of perforated cardboard, of the shape shown in the engraving. In this case the pieces were 6 inches long, 5½ inches wide below, and 3 inches above. Each of these was bound all around with narrow dark-green ribbon, and the pieces attached to one another by a few stitches above and below through the ribbon. This allowed—which is no small advantage—the whole to be folded, and occupy but small space when not in use. Each piece was ornamented by autumn leaves, bits of fern and moss; these were sewed to hold them firmly. In this case the leaves had been varnished, but if the lady will follow our suggestion to hereafter either oil the leaves, or dip them in paraffine, we think she will find it an improvement. A screen of this kind, before the leaves fade, presents a rich variety of colors; but this was the work of a former season, and though the autumnal tints had quite lost their brilliancy, the effect was still most pleasing, for the outlines were still perfect, and as these were well defined against the white ground of the card, their uniform neutral tint, while not so showy as the former bright colors, still made the shade decidedly ornamental.

DECORATED LAMP SHADE.

Village, Farm and Home Improvement.—Dangers.

Just now there is a growing interest in village improvement, and we are glad to notice that Associations are being formed in various parts of the country, for combined effort to have better roads with shade-trees, better bridges, neater front-yards, and other surroundings, and whatever may make the village pleasanter to those who already live there, and attractive to those who are seeking rural homes. That we are heartily in favor of such plans, the whole past of the *American Agriculturist* is a witness, and we are entirely in sympathy with the recent agitation of the subject of which we have already given some account, and expect to give more. We have just one fear with respect to these "Village Improvement Associations," and that is, that they will not lay their foundations sufficiently deep. A lawn is a "thing of beauty," but to be a "joy forever," the soil down beneath the green carpet, must be deep, fine, and rich, or the hot suns of midsummer will make of the green carpet a brown one. So with "Village Improvements," they should begin below the surface, and the first essentials of drainage and sewerage should not be lost sight of in providing trees for shade and adornments. There is not the least reason why the two should not go hand in hand, were it not that some of those in charge of the improvements may look more to immediate effects than to permanent, but hidden work. One of the strong arguments in favor of "Village Improvement"—and it is a legitimate one—is, that the value of the property will be greatly enhanced. That a place with good and tree-margined roads, and neatness manifest in the surroundings of its houses will prove more attractive to the seeker for a rural home, than one where these are quite disregarded, is evident. But the city dweller seeking a place in the country at the present time, is not the same as the one of 20 years ago, when prices were high and money plenty. The first question the citizen of to-day who would become a suburban, is sure to ask is: "Do you have chills and fever? Is the place healthy?"—meaning of course, healthful — and similar inquiries which only can be favorably answered when drains, sewers, and other sanitary matters have been duly provided. It is well known that some of the most delightful localities within easy reach of New York City, those possessing every natural attraction, are largely undesirable on account of malaria. The very name *mal-aria*, meaning "bad air," indicates that it is avoidable by substituting good air for bad, and it is well known that by removing the contaminations, chills and fever, congestive fever, "dumb ague," and all the miseries produced by malaria, disappear. But malaria is not the only trouble due to local causes. That most alarming of epidemics—justly alarming in its suddenness, and in mainly finding its victims among children, diphtheria, is now classed among preventable diseases and is regarded as one of Nature's protests against the violation of the laws of health. We have not seen this matter set forth more clearly and tersely than in the report of Doct. E. M. Snow, the most efficient Health Registrar of Providence, R. I. He finds it his "duty to ask the attention of the people of Providence, and especially of parents, to the following statements." We also find it *our* "duty" to call the attention of the people of the whole world—for there are few parts of it not reached by the *American Agriculturist*—to his words when he says:

"1. No case of diphtheria occurs without an adequate cause. This is self-evident."

"2. The cause of nearly all cases of the disease exists in the houses or premises, or within a few feet of the houses where these cases occur."

"3. The cause of nearly all the cases that occur in this city, is breathing impure air from privy vaults or sink drains; or drinking impure water."

"4. Much observation and long continued and careful investigation have perfectly satisfied me of the truth of these propositions, and they are applicable to all cases, whether in the tenements of the poor or in the mansions of the rich."

These statements carry weight, for they are from one whose reputation as an authority in sanitary matters is world-wide. They, too, have an application beyond diphtheria—and stand with equal force for the slower but scarcely less fatal typhoid.

Let us beautify, let us make our roads as level as floors, let us plant trees, let us do away with unsightly fences, let us adorn our front-yards with figures of flowers on carpets of lawn, let us hide the crude carpentery of our verandas with graceful climbers—but first, before all and above all—let us look to the "privy-vault" and "sink-drain," as these stand for the wastes of our daily life which must be got rid of—and merely putting them beyond our sight is not getting rid of them. This removal of the wastes of the house is eminently a household matter, and is one that may properly occupy the attention of the

house-mother. At the beginning of the year, we naturally think of, and plan for improvements, and we belittle no others in claiming the first place for those that relate to the health of—indeed the life of — the household. Two of the greatest scourges of country life—typhoid fever and diphtheria—are by the highest authorities traced directly to the water we drink, and the air we breathe. The sources of contamination in both cases are the privy-vault and the sink-drain. In a matter of life and death we cannot be squeamish, but must speak plainly. Take the country through, outside of cities and places large enough for public sewerage, the condition of the privy-vaults is a disgrace to our civilization, a horror and a shame. If it were only an offense to our senses, this would call for a reform; but when we have the highest authority for the statement that it brings disease and death, why should we hesitate? There is no evil more easy to reform than this — reform it out of existence? Among all intelligent people, the privy-vault should be abolished. There is no need of discussing how far off the well must be to be safe from contamination, or how far from the house to avoid its odors —it simply need not exist. A privy-vault is no more needed on a farm or other place than a pillory —both are relics of a semi-civilized life. Be done with it altogether. The writer speaks from 10 years' experience, when he asserts that a privy-vault is an unnecessary nuisance. Dry earth or *coal* ashes are obtainable everywhere, and no consideration of expense need stand in the way of abolishing every vault on the continent, while every consideration of health, comfort and decency demand the change. We have already shown how easily it is to establish an earth closet, and for the benefit of many new readers must do so again, but at another time, as this article is already too long. The disposal of the vault danger is the easier of the two. The sink-drain question must be left to another month.

Macaroni and its Uses.

In a notice of Miss Corson's little work on "25-cent Dinners," it was stated as one good feature of the book, that it recommended Macaroni, and told how to cook it. This cheap and very nutritious food may be cooked in a variety of acceptable styles, and is a most excellent substitute for vegetables. Potatoes are apt to be poor late in the season, and if macaroni be used instead, it will be found vastly more nutritious. Macaroni comes in boxes of about 25 lbs., and is sold by the box at an average price of 15–18c. per lb. It is in long pipes, or tubes, sometimes several feet in length, being bent over and over; it is a little larger round than a common lead pencil, and has a dull appearance, somewhat like that of horn. It is imported from Italy, and though it has been made in this country, and perhaps is still made, it is, for reasons to be explained presently, vastly inferior to the imported. Macaroni is really dried flour paste, but there is, as every housekeeper knows, a great difference in flour, and the kind best for bread is the poorest for macaroni, and vice-versa. Flour consists largely of starch. If we mix up some flour with water, to form dough, and tie a lump of this dough—say as big as a hen's egg—in a piece of muslin, and then hold it under a stream of water, and work it as the water flows, the starch will soon be washed out through the meshes of the muslin, when the water runs clear, showing that the starch has been washed out, if we open the cloth there will be found a small quantity of a pasty stringy mass—this is gluten. It differs from starch in containing nitrogen, and it will soon spoil. Starch is a *heat*-producing food, gluten is a *flesh*-forming food, really the most nutritious portion of the flour. Our best wheats make flour with 7 or 8 parts in the 100 of gluten. Other wheats contain about twice as much. It is only wheats rich in gluten that make good macaroni, and while the flour of our wheats make the best and lightest bread, it is only the wheats of the south of Europe, especially some kinds raised in certain localities in Italy, that make the best macaroni. This is why it can not be made successfully in this country—our flour is in one sense, too good. The proper kind of flour is made into a stiff paste with water, well worked by means of a wooden bar, and then put into a mould in which it is subjected to great pressure. The mould has holes in it, of the proper shape, and the paste is forced out through these as fine threads, when it is called Vermicelli, or as pipes or tubes, when it is Macaroni. It is dried by a heat sufficiently to slightly bake it, when it is ready to be packed in boxes. The same paste rolled thin, and formed by proper cutters into squares, stars, hearts, etc., is known as Italian paste. Vermicelli and Italian Paste are rarely used except in soups. It will be seen that macaroni is the most nutritious of all farinaceous foods, and one that should be more generally known and used than it now is. We may add here, that it is a most excellent thing for explorers and other travellers—as we know from experience. Those who go on hunting and other excursions, which take them where vegetables are not procurable, will not miss these if there is a supply of macaroni. Old macaroni is sometimes infested by an insect which feeds within the cavity; upon holding the sticks up to the light this may be seen as a dark spot. In our first experience with macaroni, it seemed so hard and horn-like, that it was put to soak before cooking; as a consequence it was spoiled. It should be put at once into boiling water. The following directions for cooking it are from "25-cent Dinners," and abridged so far as they give matters already stated above. Miss Corson gives the following general directions under

MACARONI.—Wipe it carefully, break it in whatever lengths you want it, and put it into boiling water, to every quart of which half a tablespoonful of salt is added; you can boil an onion with it if you like the flavor; as soon as it is tender enough to yield easily when pressed between the fingers, drain it in a colander, saving its liquor for the next day's broth, and lay it in cold water until you want to use it. When more macaroni has been boiled than is used it can be kept perfectly good by laying it in fresh water, which must be changed every day. After boiling the macaroni, you can use it according to any of the following directions. Half a pound of uncooked macaroni will make a large dishful.

MACARONI, FARMERS' STYLE.—Boil half a pound of macaroni as above, and while you are draining it from the cold water, stir together over the fire one ounce each of butter and flour, and as soon as they bubble, gradually pour into the sauce they make, a pint of boiling water, beating it with a fork or egg whip until it is smooth; season it with a level teaspoonful of salt and a level saltspoonful of pepper, and put the macaroni in it to heat; then cut an onion into small shreds, and brown it over the fire in a very little fat; when both are done, dish the macaroni, and pour the onion out of the frying pan upon it. It is excellent; and ten cents will cover the cost of all of it.

MACARONI WITH BROTH.—Put half a pound of macaroni, boiled as above and washed in cold water, over the fire with any kind of broth, or one pint of cold gravy and water; season it to taste with pepper and salt, and let it heat slowly for an hour, or less if you are in a hurry; then lay it on a flat dish, strew over it a few bread crumbs, which you will almost always have on hand if you save all the bits I speak of in the article on BREAD; then set the dish in the oven, or in front of the fire to brown. It will cost less than ten cents, and be delicious.

MACARONI WITH WHITE SAUCE.—Warm half a pound of macaroni, boiled and washed in cold water, as above, in the following sauce, and use it as soon as it is hot. Stir together over the fire one ounce each of butter and flour, pouring in one pint of boiling water and milk, as soon as the butter and flour are mixed; season it with salt and pepper to taste, and put the macaroni into it. This dish costs less than ten cents, and is very good and wholesome.

MACARONI WITH CHEESE.—Boil half a pound of macaroni, as above, put into a pudding dish in layers with quarter of a pound of cheese, (cost four cents,) grated and mixed between the layers; season with pepper and salt to taste; put a very little butter and some bread crumbs over it, and brown it in the oven. It will make as hearty and strengthening a meal as meat, and cost about twelve cents.

A Convenient Small Toaster.

A toasting-fork is not a convenient affair to use over a stove fire, the position in which it must be held exposes the hands unpleasantly to heat, and there is danger that the slice will fall off. The engraving shows a small toaster, which we find better than a fork. It is made of copper wire, a little larger than a common knitting needle, bent into the form there shown. The broad part is 5 inches across each way; the wire being bent in the form of a Maltese cross, is much firmer than a simple square or circle would be. Below this part the ends of the wire are twisted together for about an inch, and lie side by side until they enter the handle; this straight portion is 7 inches long, and fits into a wooden handle of about the same length. There are two pieces like this—but one, to avoid confusion, being shown—set into the handle in such a manner as to spring apart an inch or more; a common curtain ring slides upon the straight portion, to bring the two halves together and hold the bread. It takes two and a quarter yards of wire, which should be cut in halves, and the bending to form the cross should begin in the middle of each. This toaster may be made in a very short time, and is a neat present for a boy to make his mother.

BREAD TOASTER.

Coal Fires—Practical Hints.

So much of comfort, health, and economy, depends upon the proper management of coal fires during winter, that we offer a few common-sense suggestions which may be new to some of the readers of the *American Agriculturist*, who have not given thought to the subject.—In *renewing* a fire in a stove or furnace, it is customary to dash in a lot of coal, entirely covering that already on fire. The result is a cold spell, cessation of cooking, etc., for half an hour, more or less, depending upon the kind of coal, its size and quantity, the draft, and the amount already ignited. Often the fire vexatiously goes out. This can be avoided by piling all the fresh coal upon only half or so of that already on fire. The burning portion will partially maintain the heat, will keep up a draft, and rapidly extend through the fresh coal. When that is well on fire, it can be spread over the whole, or, if needed, more coal can be put in on the other side, leaving the new coal well burning. In this way a *continuous* heat can be maintained, with far less risk of extinguishing what we have. This may seem a small matter, but it will often contribute a great deal to comfort, and often save weak or sickly or damp persons from taking or increasing a cold. In the kitchen it may save the spoiling of good cooking or baking. In large steamships, a steady power is kept up by having several fire-boxes under the same boiler, and replenishing only one at a time.

When a coal fire is almost out, it can be started afresh by first adding a little fine coal over the fire, with a bit or two of dry wood if needed, and covering all around it with coal enough to concentrate the draft upon the little fire remaining.

Starting Coal Fires.

In *starting* a fire, a great point is to concentrate the draft. If kindling wood is abundant and cheap, a large quantity may be thrown in and fired, and when well ignited, the coal thrown on freely. But usually it is better to put a little kindling in a pretty compact heap *in one place*, at the middle of the grating; when well started, put over it a little

fine coal, and cover all the rest of the grate with at least coal enough to turn the draft of air through the kindling point. It will burn more certainly and more rapidly, and extend to the rest of the mass much sooner than if the kindlings were spread out so as to give no strong heat to the hard coal at any one point.—The best kindling for hard coal, is a few shavings or paper to catch from the match; over this a little pine, cut short; and over this charcoal, or *dry* hard wood only half a foot or so in length, and split fine—all the kindling in one pretty compact mass. The point is to get heat enough to ignite the *hard* coal. When the draft is not strong, or one is in haste, cover all the grating with a few thicknesses of waste newspaper, or any coarse paper, with some coal upon it, except right under the kindlings. This will concentrate the draft at that point, and greatly hasten ignition. The paper will burn off as the fire spreads, and admit the air to other points.

Saving Coal.

In mild weather, much coal may be saved in large stoves, or furnaces, or grates, by covering a part of the grating with brick, or flat stones, or clay even, or by covering part of the coal with fine ashes, so that the draft of air can only pass through a part of it. A little skill and care in this will effect a great saving of fuel, and supply an amount of heat adapted to the weather, or to the rooms to be warmed. We prefer a pretty large fire-box in a stove or furnace, and in the cook stove even, the burning portion or surface to be contracted or regulated as above; we then have ample room for a large fire when it is wanted in extreme cold weather, or for an emergency. The brick or clay can be readily removed from any part of the grating as desired.

Size of Coal.

The smallest coal that will not drop through the grating is usually the most economical for all fires, even for large heating furnaces. Large lump, or egg coal even, requires a considerable depth of mass to burn well, or indeed to keep ignited at all. Fine coal two or three inches in depth will keep on fire, and its rapidity of burning can be easily regulated by the dampers, or opening the upper door, or by covering a part or the whole with ashes to be raked off or shaken out as necessary. For the cooking stove or range, with three tons of moderately small "stove-coal" size, we buy one ton of "chestnut" or "nut" size, to be used in kindling, in starting up afresh quickly, and when only a small fire is wanted for a short time. For the largest heating furnace we use "egg" size (not lump), and with each four or five tons, one ton of stove size, and half a ton of chestnut size—the smaller sizes for kindling, and renewing, and when but little fire is required—regulating consumption by dampers, or ash covering, or stopping part of the grating.

Soda and Hot Water.—Every now and then a recipe comes to us, directing a certain amount of soda which is to be dissolved in "hot water" before adding it to the preparation. The "soda" referred to is of course that known as cooking or baking soda—the bicarbonate of soda of the shops. "Hot water" is not very definite, but many thinking "the hotter the better" will use boiling water, and thus render the soda in good part useless. We use soda with sour milk, molasses, or wherever an *acid* is present (as there usually is in molasses, even though it is *sweet*), for a double purpose: in the first place to neutralize the acid, and secondly that the carbonic acid (a gas) set free by this action of the acid upon the soda, may permeate the mixture in minute bubbles, and, when these bubbles are expanded by the heat of cooking, make the article "light." We use washing soda for cleansing purposes and the other kind in cooking. Why? Because, supposing both to be pure, the cooking soda contains twice as much carbonic acid—the gas just mentioned—as washing soda does. So far as merely neutralizing acid goes, washing soda is as good as the other, which is preferable merely because it gives off more gas. If we heat baking soda, the extra quantity of gas is driven off, and it is reduced to common or washing soda. A similar thing happens if baking soda is placed in boiling water—a large share of its carbonic acid is driven off; even if the water is but scalding hot, some will pass away. It will be seen, then, that to dissolve cooking soda in *hot* water we reduce it to the condition of washing soda, more or less, as the water is hotter or cooler, and if boiling water be used we might almost as well take the common soda at the start. Hence, when soda is to be dissolved for use in cooking, let the liquid be merely blood-warm.

BOYS & GIRLS' COLUMNS.

"Please, Give Us More Plays!"

writes one of our young readers, for, she says, "we only have our Church paper and the *American Agriculturist*, and the Church paper is for Sunday-reading."—Well, we will try to gratify such readers, for we believe all children should play *some*. This month we are too busy in reading the hundreds of letters, on a great many subjects, from renewing subscribers that come every day. But we must try to mix in good instruction, as well, for we want every young person to *learn something new* in every number, something that will be useful or of interest all their lives, something that will set them to thinking about other things. A play or puzzle interests for an hour, and that is the end of it. But we will try hereafter to give the

"UTILE CUM DULCE."

There! We have got in one of those "foreign phrases," before we thought of it. As it is written down, we will explain it, so that you will always know what it means, when you see it. "*Utile*" is the Latin for useful, beneficial, valuable. Our word Useful came from it. "*Cum*" is the same as our preposition, with. "*Dulce*," means sweet, pleasant, delightful. So, "*Utile cum dulce*" means, the useful *with* the pleasant. That will be our motto in this department during the present year; and, though we do not write it out in Latin again, you will know what it means, and what we will try to give our young friends.

No. 464.—**Puzzle Picture.**—Well! we should not have thought it possible, but really a whole year has passed since we have had a Puzzle Picture. There have been so many real natural puzzles in microscopic and other matters, that we have not thought of the artificial

ones. A year makes a great change in our *Agriculturist* family of youngsters. New children come in, and others, feeling that they are no longer boys and girls, cease to take interest in puzzles of any kind, but turn to the parts of the paper intended for older persons. It may be necessary to say to the new comers that a puzzle picture is intended to give you a little trouble, that you may show your skill. It is in fact a double picture; one made up of certain parts that strike the eye at once, and the other of parts which are so arranged that you do not notice them at first sight, but when once seen, are very plain, and, indeed, you cannot avoid seeing them, and only wonder why they were not plain at first. Of this kind is the above rural scene, taken evidently just in the season of hay-making. The frog evidently admires the view, but whether it is the hay-cock, that so surprises him, or something else, you can perhaps find out if you look.

Our Puzzle-Box.

SYNCOPATIONS.

(*Example.*—Syncopate a bird and leave an animal. *Crow, cow.*

1. Syncopate a flower and leave an animal.
2. Syncopate an article of clothing and leave an animal.
3. Syncopate another animal and leave a dwelling.
4. Syncopate a fish and leave an article of dress.
5. Syncopate a relative and leave an insect.
6. Syncopate an excuse and leave a vegetable.
7. Syncopate a tropical plant and leave a beverage.
8. Syncopate a pipe and leave a color.
9. Syncopate a volume and leave an extremity.
10. Syncopate a metal and leave a boy. ISOLA.

HIDDEN LITERARY CELEBRITIES.

1. I understand that he will keep operatic pieces.
2. Long rays of light emanated therefrom.
3. His cottage stands in a sequestered vale.
4. I saw the rascal make at Sam with a dagger.
5. He wrote several beautiful pieces of poetry.
6. Your friend Will is not at home.
7. Thomas where is the cow? Perhaps she is in the field.
8. He saw a red ant eating his winter store of provisions.

ALPHABETICAL ARITHMETIC.

C T S H) L O T M E I Y (H I L E

C T S H

E C Y S E

E H H E I

Y M H L I

Y I I Y L

H O E S Y

H S T O E

S H Y S

NUMERICAL ENIGMAS.

1. I am composed of 11 letters:
   My 10, 1, 5, 11, is a course.
   My 2, 6, 4, 7, 8, is crime.
   My 3, 9, 11, is a bitter plant.
   My whole is husbandry. ST. CLAIR & DE LEON.
2. I am composed of 12 letters:
   My 6, 5, 3, 8, 12, 1, 4, is an animal.
   My 8, 7, 2, 9, is a household article.
   My 4, 3, 11, is a small mark.
   My 5, 10, 1, is a member of the body.
   My whole is the name of a river. A. L. PARKYN.
3. I am composed of 43 letters:
   My 22, 33, 9, 36, 31, is a vessel.
   My 15, 1, 11, 38, 18, 43, to give notice.
   My 27, 5, 23, 29, 37, to strip.
   My 3, 24, 17, 40, 21, 30, a check.
   My 10, 32, 14, 2, 39, 4, to exalt.
   My 7, 42, 12, 26, 13, 34, imposition.
   My 41, 20, 19, 25, 35, one unwise.
   My 16, 28, 6, to cast.
   My 8, is a vowel.
   My whole is a quotation from Washington Irving.
   C. B. R.

CROSS-WORD.

My first is in bottle but not in wine,
My next is in cattle but not in swine.
My third is in coffee but not in tea,
My fourth is in arbor but not in tree,
My fifth is in yellow but not in blue,
My sixth is in me but not in you,
My seventh is in tatter but not in rag,
My eighth is in tarry but not in lag,
My ninth is in silver but not in gold,
My whole was a soldier, brave and bold.
FRANK L. H.

PI.

Helawnebo si on ebon ta lal; ron seod ti spessos nay stripproree fo beon. Ti si a stabsecun cheattad ot het rowci wsj fo eth ahewl, dan emses ot nastir het trawe, cwihh eth ruetrace eskat pu ni greal sluftohum.

DOUBLE ACROSTIC.

Primals and finals name two places where battles were fought during the revolutionary war.

1. An Indian chief.
2. A mythological ship.
3. A singing bird.
4. Part of the body.
5. A garden vegetable.
6. A kind of brass.
7. A domestic animal.
8. A forest tree. ISOLA.

BLANK ANAGRAMS.

(The italicised words in a sentence, transposed into the original word, will fill the blank and complete the sense.)

1. He is always in search of ——; nothing *ever daunts* him.
2. General! *Our best Indian* is ——!
3. Has *Louisa gone* to get that —— compound?
4. We bought *our petrels* at the ——.
5. *Dear sir, save* me from my ——.
6. *Ask Mat how* he liked the ——.
7. Sometimes the —— *rise late.*
8. *Act, I pray*, with less ——.
9. *O! let me sit* under the ——.

Puzzles, answers, and such matters as were formerly directed to "Aunt Sue," may hereafter be sent to "The Doctor," No. 245 Broadway, New York.

ANSWERS TO PUZZLES IN THE NOVEMBER NUMBER.

NUMERICAL ENIGMA.—John Halifax, by Miss Mulock.

PI.—The world is a looking-glass, and gives back to every man the reflection of his own face. Frown at it and it will in turn look surly upon you; laugh at it and with it, and it is a jolly, kind companion.

ANAGRAMS.—1. Particular. 2. Chrysalis. 3. Indomitable. 4. Malevolent. 5. Advocates. 6. Greediness. 7. Consternation. 8. Terrifying. 9. Landscapes. 10. Escapade.

GEOGRAPHICAL DOUBLE ACROSTIC.

Hindostan—Gibraltar
H— eidelber —G
I— ir —I
N— obo —B
D— enve —R
O— mah —A
S— andy Hil —L
T— remon —T
A— requip —A
N—orth Rive—R

WELL-KNOWN CITIES CONCEALED.

1. Troy.
2. Boston.
3. Toronto.
4. Hartford.
5. London.
6. Rome.
7. Trenton.
8. Concord.
9. Salem.

CROSS-WORD.
The Marchioness.

CHARADE.
Foxglove.

The Doctor's Correspondence.

Chas. L. J., Elgin, Ill., wishes to know "ABOUT DATES which come in coarse bags with long seeds mixed in a sort of preserve." I suppose that many boys and girls who have eaten dates would like to be told something about them, and will be surprised to learn that this sweetish mass which they buy as a curiosity or a treat, and soon tire of, forms the almost sole food of many people. But first let me describe how it grows. The Date is the fruit of a Palm—the Date Palm—and whenever you find the Palm mentioned in the Scriptures, it is supposed that this is the one referred to. The palms are all unlike any of our trees. They have a tall, straight trunk—most of them never branch—and at the very top a crown of long fan-like leaves. The engraving, fig. 3, will give you the appearance of the Date-tree, though that being taken from a young tree in Florida, is not so tall as the full-grown ones. If you will imagine a tree like that in figure 3, about 18 inches through, and rising a straight naked column about the same size all the way to 40 and even 60 feet, you can form an idea of the appearance of this

Fig. 1.—THE DATE.

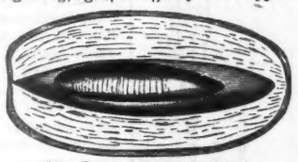


Fig. 2.—SECTION OF DATE.

MOST NOBLE AND USEFUL PALM.

I can not recollect that I ever saw but one full-grown Date-tree. That was many years ago, when I was with a party travelling towards the City of Ures (pronounced *Oores*), which was then the capital of the Mexican State of Sonora. It was a bright Sunday morning as we left our camp and started towards the City. After a while a spot appeared against the sky; one of our Mexicans pointed it out with much glee, saying, Ures! Ures!!—After an hour's travel the spot against the sky grew more distinct, and I could make out palm leaves. Bang—bang

Fig. 3.—THE DATE PALM.

—went distant cannon, and every Mexican's hat came off for a minute, when it was replaced with, Ures! Ures!! again. Every considerable Mexican town is a military post, and at a certain point in the services of the church the soldiers discharge their guns, or the cannon, if they happen to have them. This palm-tree grew more and more distinct, at last we crossed a little stream and seemed very near it. We are in Ures, said the Mexicans. Surely enough we were. The one story *adobe* (sun-dried brick) houses, mostly of the same color as the ground they stood upon, were so hidden by trees that we did not see them. We had not been looking down for a city, but *up*, and this one Date Palm—it must have been 50 feet high—was the only conspicuous thing about it. We had to stay in that clutter of mud houses for several weeks, on account of an accident to a member of our party, and the one thing that made the town to me, was that one Date-tree, and I often thought what a blessing that tree was to the people living there, to always give them

SOMETHING HIGHER TO LOOK UP TO!

But in giving my "traveler's yarn," I am getting away from the date story. The Date Palm has its pistillate—or fruit-bearing flowers, and its staminate, or pollen-bearing ones, on different trees. Both kinds of flowers are at first—in the bud—enclosed in a hard case or sheath, as shown in fig. 4; this bursts open and falls away when the flowers are ready to bloom; the flowers are small and not showy, but in immense numbers; some are shown separate in the engraving. The cluster of fruit, when ripe, is made up of long strands. The dates as you find them in the mats give you but little idea of their appearance. Figure 1 shows the fruit, perhaps a third less than the real size; when ripened on the tree they are very rich and pulpy. If to be sent away, they are picked somewhat before they are quite ripe and dried, and in this unpressed condition small quantities are imported into New York and other cities, but as they are rather expensive, I doubt if many are sent to the inland towns. These appear like fig. 1, but larger, are of an amber-color, and when cut open show the seed or Date-stone within a cavity, as in figure 2. The fruit in this state is very tender, and without the cloying sweetness of

THE DATES IN MATS,

which are not, as many suppose, preserved in sugar. They are simply the ripe dates crowded into bags of matting, by which they lose their shape and are pressed flat. It is in this form that they are put up for keeping and commerce. The date is abundant all through northern Africa, and has been taken to other countries where the climate is sufficiently warm to allow it to perfect its fruit. Some wandering tribes of the deserts live almost entirely upon dates, and a failure of the date crop—which rarely happens—is a great calamity. Nearly every part of the tree serves the people, where it abounds, for some use. The trunk supplies timber, the leaves are made into baskets and bags, and even the stones or seeds serve as food for the camels. Date-stones usually germinate readily, and if you care to plant some in a pot or box, you can learn how the Date-tree looks when young. ....Thos. S. M., of Lawrence, Kas., wishes me to tell him

ABOUT COLLODION,

and why it is used in taking photographs. Collodion—from a Greek word, meaning "to stick"—came about very curiously. About 30 years ago, a German chemist wiped up some acid with a lock of cotton, and when he threw it into the fire, noticed that it burned with a flash, and differently from common cotton. He took the hint, and made experiments, and found by soaking cotton in a mixture of nitric and sulphuric acids, washing and drying it, that, while it looked like ordinary cotton, it would explode with great force—with more power than gunpowder. This was called gun-cotton, and while it is not much used for guns, it is sometimes employed in blasting. A medical student in Boston discovered that gun-cotton would dissolve in ether, and make a varnish which he called *collodion*; he found it dried upon his fingers, as a film which would not wash off, and was transparent. It occurred to him that this might be used for dressing wounds, and it is still employed in some cases, and still sold as liquid court plaster and liquid cuticle, to cover places where the skin has been knocked off, and for such uses. But the greatest use of collodion is in photography; it dries very rapidly, and forms a thin, transparent film. Some of the chemical substances used in taking photographs are dissolved in collodion; a little of this poured upon a clean plate of glass at once spreads evenly over the glass, the ether dries away in a few minutes, and there is a transparent coating of the needed kind for the light to act upon, in taking the picture. Of course, this is a mere outline, and does not pretend to tell all about taking the picture—only the use of collodion, in doing it. See what a great thing has come from a mere trifle—our portraits and views, which are often so dear to us, are all due to that sharp-eyed Schonbien, the chemist, who would not let such a trifle as the unusual burning of a bit of waste cotton pass, without looking into the cause, and following it up. At first it was thought that gun-cotton would supersede gunpowder, but there are reasons why it is of but little use as a destructive and life destroying agent, while it has found a more peaceful as well as more beneficent work to do.

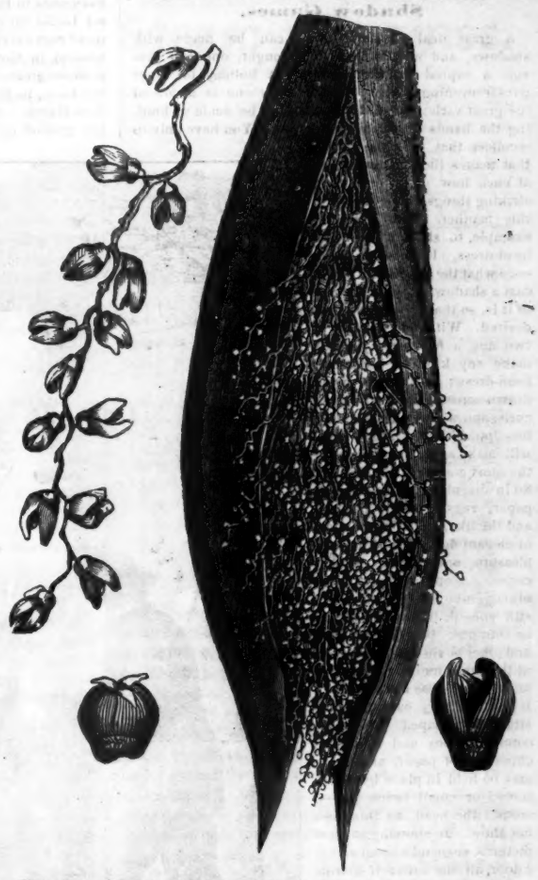


Fig. 4.—FLOWERS OF DATE PALM IN SHEATH AND SEPARATE.

HARD TO GUESS—DIFFICULT QUESTIONS.

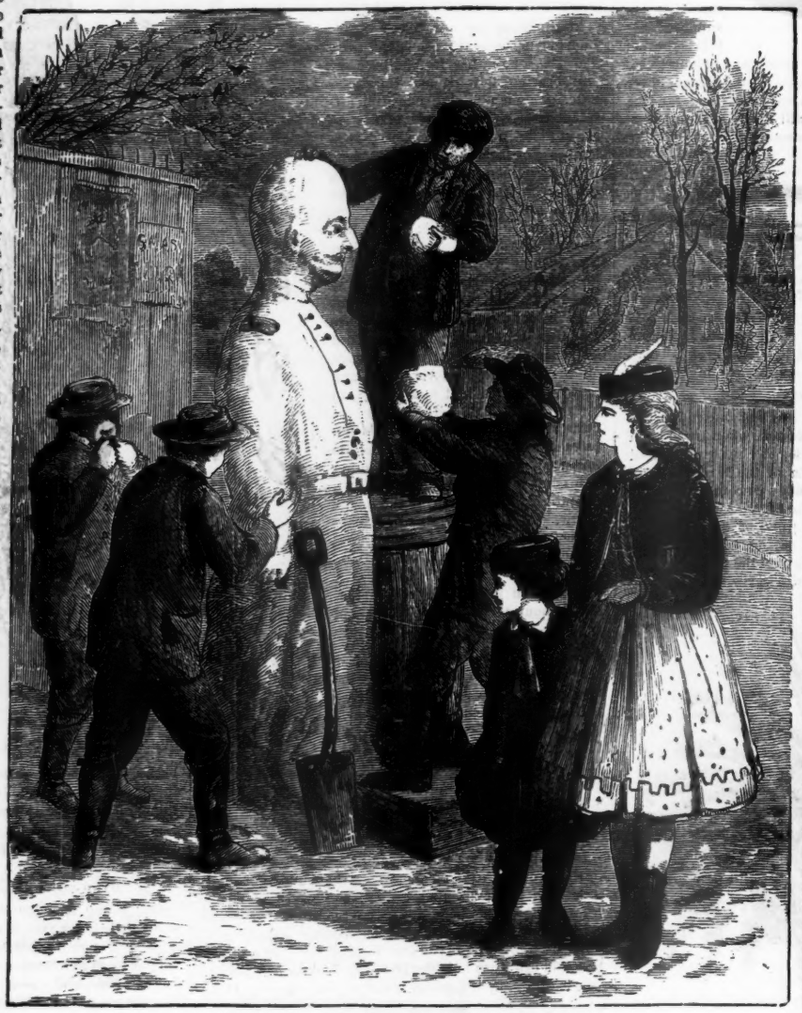
Our young friend, "W. J. E.," Newark, N. J., found some little black things, about the size of a flax-seed, in a decayed squash; finding something alive within them he put them in a bottle; afterwards he found a large fly in the bottle, and one of his little black bodies empty; he asks me to tell "what they were, and all about them?"—It is not always an easy matter to say what an insect is, if I have it before me, but to give a name from no other description than "a large fly" is impossible. I mention this case, because it is of a kind that happens frequently, and it will explain why a number of questions have not been answered. I am desirous of helping you learn about such things, but you must do something towards it yourself. When you send me an insect or other matter that you would know something about, you may be sure that I do not give it up without a trial; but when you simply say "a large fly," I give it up at once. Some questions are not answered because they do not belong to our paper at all, and especially not to the boys and girls part of it. For example, one boy wishes me to tell about Hindoo arithmetic, another how to make Lager Beer—and another about training trotting horses!

To tell a Missing Figure.—Here is a little trick with figures, that is very puzzling until one knows how it is done, and after one knows it, that it should be so is not the less puzzling. Ask another to put down several figures to make a high number. Suppose 18373645. Tell him to add these figures, which, in this case, will give 36. Then subtract this sum from the figure 18373645—36=18373609. All this while you have not seen the figures. Tell him to cross out one of these

figures, add up what are left, and name the amount, and you will at once tell him what figure he erased. Suppose he erases the figure 7—the remainder added together make 29. The difference between this figure and the multiple of 9 that is next higher, will give the numeral crossed out. The next multiple of 9 to 29 is 36—and the difference between 29 and 36 is 7, the figure removed.

Shadow Games.

A great deal of amusement can be made with shadows, and with a little forethought, one can provide a capital entertainment for a holiday or other winter evening party. Almost every one is aware of the great variety of shadows that may be made by holding the hands in different positions. You have only to recollect that it is the *outline* that makes the shadow, to see at once how many droll and striking things can be shown in this manner. You wish for example, to show a particular head-dress. It makes no difference what the material, if it will cast a shadow, or what the rest of it is, so that the outline is as desired. With a newspaper or two and a few pins, you can make any kind of bonnet or head-dress; strips of paper drawn across a knife will make curls, and a paper feather may be clipped in a few minutes that will make as fine a shadow as the most costly ostrich feather. So in disguising or costuming, paper, rugs, shawls, pillows, and the like, will allow comical or elegant figures to be made at pleasure, and if one wishes crowns, sceptres, keys, and other emblems, brown paper stiff enough to hold its shape, or thin paste-board, old ribbon and other boxes that may be had at the stores for the asking, will answer as well as the real thing. It will be very easy to make strangely shaped foreheads, comical noses and wonderful chins out of paper, and these may be held in place by coarse thread or small twine passed around the head, as this does not show. In showing shadow pictures, suspend a sheet across a door, all the better if a wide or folding door. The company are to be upon one side and in the dark. On the other side there should be but *one* very strong light, and it will be all the better if this has a reflector. If you have two lights, the shadows will be double and spoil all. This light should be fixed in some secure position at a hight about opposite the performers' heads; the best distance from the sheet will be found by trial. The performers should stand close to the sheet to give a clear shadow, and each one should recollect to hold whatever they may have, and also to hold themselves in just the position to make the best shadow. Then a story or poem should be selected which allows of considerable movement, and the characters arranged before hand to illustrate the story while it is being read. Some of the wonderful and improbable Arabian Night's tales would make capital subjects. Comic pieces like Holmes' poem, "The Tall Young Oysterman," will afford much fun if illustrated by ridiculous shadows. Of course such things go off better if a rehearsal can be had before hand.



A SNOW MAN IN UNIFORM.

The Paper now in Your Hands Came from Egypt!—Interesting Items.—Most persons highly value anything coming from a distant foreign land, as from Palestine, or Egpyt, etc. Well, with *this* copy of the *American Agriculturist* in your hands, you actually hold something that has come all the way from Egpyt in Northeastern Africa, and this is how it came about: You know that in Egypt, as in many other places, the people have but few books or newspapers, and don't write many letters, and so they need very little printing or writing paper, and what they do use is mostly made elsewhere. Of course they want few *rags* to make paper of. But they are very saving. Every bit of rag is gathered, washed and sold, or exchanged for confectionery, etc., and especially for cheap, coarse earthern jars and vases, mostly white, but roughly painted in bright colors, which are bought for ornaments in their poor rooms. The dealers find among these rags, hundreds of rag dolls which often have hair sewed on their heads. The rag merchants do a large business there. The Seymour Paper Co., that made *this* paper, has agents in Egypt, who send over for the mills at Windsor Locks up in Connecticut, a good many ship-loads of these rags every year. They have "Shoonah's" (warehouses), in Alexandria and Cairo, with dusters, presses, steam-engines, etc., to prepare the rags for sending them, in full ship-loads, direct from Alexandria to New Haven. At the mills, the rags are bleached white, and ground or cut into fine pulp; this is floated in water upon an endless sieve; as it moves along, it is shaken sidewise to intermingle the fine fibres of the pulp; the water falls through; the sheet of pulp is taken off by cylinders, some of them heated by steam inside; these press the fibres together firmly and dry them; the paper is coated with a sizing preparation, smoothed and dried and ironed (or "calendered"), by heavy, hot rollers, then cut up into sheets 30x52½ inches, packed in bundles of 1000 sheets, and sent to N. Y. by R. R. and Steamboat, to be printed here. In order that the paper may be strong and durable, no clay, no straw or wood, which enter largely into the manufacture of most paper now made, is allowed in the printing paper for this Journal; but it is made of all pure linen and cotton rags, and we happen to know that *these rags all came from Egypt.* The original cotton probably grew in our country, and the linen in the North of Ireland; they were made into cloth in England, sent to Egypt and worn there to rags; then gathered as above, and *now you hold them in your hands.* If you look at the paper with your microscope, you can see the fine fibres—cotton fibres from several of our Southern States, mingled and arm-locked with linen ones from the Emerald Isle. If they could speak, what a story each fibre could tell of its origin, its wandering, its treatment, and what it had seen.

Winter Ways—The Snow Man.

The boy—or girl, either—who never helped make a snow man, has never had half the fun that winter brings. There is something about the first snow—not the mere flurry—but the right down good snow storm—the kind that old people call "old-fashioned"—that sets youngsters into a state of excitement. This is natural enough, for do they not find everything changed as they look out in the morning? When they went to bed there were a few flakes falling, but all night long, while they have been sleeping, the snow has come down; fast and faster have come the soft white flakes, and silently have they fallen upon one another, and in the morning—what a change! You can see by the fences where the road ought to be; there is the well curb, and yonder the hay-stacks—but all the paths, the low stone walls, the horse block—all out of sight, and only one broad plain of white so far as can be seen. No wonder that this change excites young folks. All is different around them, and they feel like doing something different themselves. But work first and play afterwards, and now the work can be half play, for the clearing of paths, sweeping off steps, at first real fun, gets to very much like work by the time it is finished. But the time for play comes, and the play must of course have something to do with the snow. Boys settle down upon one of two things—a snow fort or a snow man—and if girls have a voice in the matter, it is likely to be the man, for if there is a fort there must be a snow-ball fight, and that is rather rough for girls. But at the first the snow is too light for either, and the youngsters find they must wait for a day or two until the snow settles, before they can enjoy the fun. When the snow will pack, when it will gather by rolling, and a small ball will soon roll into a large one, then the snow man can be made. Generally one boy is the head sculptor, and the rest help. Very droll affairs these snow men often are, and we have thought if one could get a few dozens of them together, they would make about as funny an art gallery as would the same number of the images that stand for Indians at the doors of the city tobacco shops. First a big ball, as large as all hands can roll, is made for the foundation of the man. Next a smaller one, for the body, must be rolled up by the help of a board, and be placed upon the other. Then a still smaller one is lifted up for the head. These are the raw material, the marble, and when this is ready the work of the artist may begin. It is well to decide beforehand what kind of a man it shall be, else where several work at it there will be confusion. The young people in the picture had a military idea, and they are trying to work out the form of a General. The head seems large for the body—but perhaps they have heard that Napoleon or other great General had a "long head." If you wish the man to last—and if well built and favorable weather follows, one will stand a surprisingly long time—you will join on the head by means of a stake run down through the body, and if the arms are to do anything but hang down by the sides, some sticks must be thrust into the body to build the snow around. Of course you will think of bits of coal for the eyes, and if something can be found to serve for buttons, all the better for the coat. In making the snow man, start with a big mass of snow, and then carefully cut and scrape away all that hides the man you would make. You have the advantage over the worker in marble. If you cut away too much, you can plaster on some more snow and try again, but the marble once chipped away can not be replaced. One word of caution about your snow man—Do not make him near the road. Horses are readily frightened at unusual objects, and even a very steady, gentle horse may take fright at such a figure, and your sport be the cause of a sad result.

A Patent for Improvements in Salt-Making

has been granted by the English Government to the manufacturers of **Higgin's Eureka Salt,** of which the following prominent American Dairymen say:

From HON. HARRIS LEWIS, of Herkimer Co., a practical Dairyman, and President of the N. Y. Dairyman's Ass'n.:

"In my system of making Butter by the Granular process, the size and form of the Grain of Higgin's Eureka Salt is such that it is peculiarly adapted for salting it. I find by use that it will dissolve in from six to eight hours after it is incorporated with the Butter, and that the Butter is much better worked and packed, as soon as the Salt dissolves.

"A coarse-grained Salt, like other imported Salt, requires at least twenty to twenty-four hours, to assume the same condition, that Butter salted with "Eureka" Salt does in six hours, rendering exposure to the atmosphere, whether good or bad, nearly four times as long as with Eureka. It is unnecessary for me to state, that the sooner the Salt is incorporated with the Butter, and the Butter Packed, the more of the natural and delicious flavor of the Butter is retained. HARRIS LEWIS.

"FRANKFORT, N.Y., Dec. 4, 1878."

From J. H. GETMAN, one of the best Cheese-Makers of Herkimer Co., N. Y.:

"*H. K. & F. B. Thurber & Co.:*

"GENTLEMEN—Having used Higgin's Eureka Salt in my cheese factories since the 15th of August, 1878, I have become thoroughly convinced of its superiority over any other Brand of Salt for Cheese, by observing its uniform and prompt action upon the curd, dissolving readily, making a fine silky curd, adding to its keeping qualities, and giving and retaining a fine flavor, and improving its solidity in a greater degree than in Cheese salted with other Salt, also improving the surface of the Cheese.

"Cheese-Making has been my principal business for the past fourteen years. I think I have made fine cheese, but certainly believe I never made so fine a cheese as I have since using the Eureka Salt. J. H. GETMAN.

"COLUMBIA, Herkimer Co., N. Y., Dec. 5, 1878."

From JOHN S. MURRAY, who took Three Premiums at the late Dairy Fair held in this City, among them the 1st Premium for Best Dairy Butter made in the State of New York:

"*H. K. & F. B. Thurber & Co.:*

"I have been engaged in the Dairying business for upwards of Thirty Years, milking from twelve to forty cows, and have spared no pains to procure the Best Brands of Salt, and after trying several of the leading brands, I have finally settled upon Higgin's Eureka as the best.

"JOHN S. MURRAY.

"DELHI, Del. Co., N. Y., July 11, 1878."

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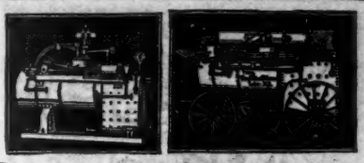

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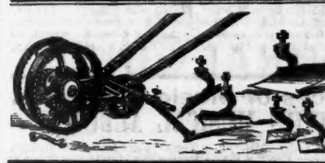

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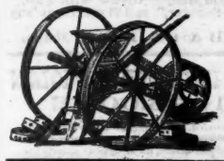

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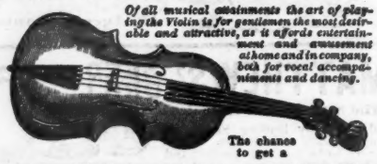

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50 *Flowered, Diamond, Basket, Roseate, etc.* **CARDS** no 2 alike **ONLY 10c.** *Name neatly printed on all.* Star Printing Co., Northford, Ct

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50 *New Style* **CARDS,** *Gold Border, Chromo, Motto,* etc., name in Gold, 10c.
STAR CARD CO., Clintonville, Ct.

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25 of the **Prettiest Cards** you ever saw, or 18 **Elegant** New Style Chromo Cards, with name 10 cts., post-paid. GEO. I REED & CO., Nassau, N. Y.

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50 **Richly** perfumed Cards, no 2 alike, name in jet, 10c.; with Case, 15c. 25 Murphy Temperance Cards, 20c.
F. W. AUSTIN & CO., North Haven, Ct.

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40 **MOTTO, CHROMO, ETC., CARDS,** name and fancy case, 10 cts.
E. D. GILBERT, P. M., Higganum, Conn.

CARDS.—10 Lily of the Valley, 10 Scrolls, 10 Engraved, 10 Transparent. 1 Model Love Letter, 1 Card Case. Name on all, 15c. WARD & CO., Northford, Conn.

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25 **ELEGANT ROUND-CORNERED GILT** Edged Cards, 15c.; in case, 20c. Name *neatly* printed in script. EATON BROS., Northford, Conn.

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18 **LOVELY ALL CHROMO CARDS,** new styles, with name, post-paid, 10c
J. B. HUSTED, Nassau, N. Y.

PERFUMED CARDS 31 styles; 50 with name, 10 cents, in case, 12 cents; 25 Gold and Silver Borders, 12 cents.
NOVELTY CARD CO., Wallingford, Conn.

STEAM ENGINES,
A. B. FARQUHAR, York, Pa.,
Cheapest and best for all purposes—simple, strong, and durable. Also *Traction Engines* for common roads.

SAW, GRIST AND RICE MILLS, GINS, PRESSES AND MACHINERY generally. Inquiries promptly answered.

Fig. 1. Vertical Engines, with or without wheels, very convenient, economical and complete in every detail, best and cheapest Vertical in the world. Fig. 1 is engine in use. Fig. 2 ready for road. Boilers 1/3 larger than other makers. Send for Catalogue. Fig. 2.

Bookwalter Engine.

Compact, Substantial, Economical, and Easily managed. Guaranteed to work well and give full power claimed. Engine and Boiler complete, including Governor, Pump, &c., (and boxing), at the low price of

3	Horse-Power...	$242.00
4½	" " ...	283.50
6½	" " ...	342.50

☞ Put on Cars at Springfield, Ohio.
JAMES LEFFEL & CO., Springfield, Ohio,
or 109 Liberty St., New York City.

Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our record kept daily during the year, show at a glance the transactions *for the month ending Dec. 13th*, 1878, and for the corresponding period last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 d's *this* m'th	475,350	4,236,000	2,434,000	387,000	743,000	831,000
27 d's *last* m'th	513,000	5,821,000	3,971,000	567,000	1,079,000	1,217,000
SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 d's *this* m'th	504,000	5,936,000	4,094,000	411,000	609,000	1,302,000
27 d's *last* m'th	521,000	6,413,000	4,812,000	531,000	826,000	1,473,000

2. *Comparison with same period at this time last year.*

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 days 1878	475,350	4,236,000	2,434,000	387,000	743,000	831,000
25 days 1877	473,000	4,116,000	3,491,000	383,000	1,312,000	1,407,000
SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 days 1878	504,000	5,936,000	4,094,000	411,000	609,000	1,302,000
25 days 1877	491,000	5,129,000	4,154,000	431,000	1,227,000	1,286,000

3. *Exports from New York, Jan. 1, to Dec. 10.*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Peas.* bush.
'78.	2,433,166	52,168,952	25,844,569	3,970,465	1,518,667	3,645,001	428,937
'77.	1,886,875	19,833,571	25,376,390	1,992,620	1,936,956	246,325	454,056
'76.	1,823,050	23,606,295	16,339,741	1,281,929	88,097	619,118	689,246
'75.	1,789,299	25,054,035	12,495,349	152,925	1,505	133,754	415,019
'74.	2,053,423	33,700,159	18,329,781	641,661	3,320	110,334	425,553

4. *Stock of grain in store at New York.*

	Wheat. bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Malt.* bush.
Dec. 9, 1878	3,910,457	3,520,555	602,206	965,577	1,339,994	133,079
Nov. 11, 1878	4,339,387	4,179,534	547,226	880,910	1,306,099	18,057
Sep. 16, 1878	1,162,808	1,113,458	71,586	209,774	697,668	131,841
Aug. 12, '78	1,126,813	998,736	62,647	203,234	472,366	137,068
July 11, '78	1,891,132	720,784	138,852	174,000	207,769	668,075
May 7, 1878	748,196	263,020	75,229	207,576	570,288	258,327
Apr. 15, 1878	1,370,081	541,648	106,375	396,861	857,273	253,424
Jan. 10, 1878	2,586,715	105,909	286,333	913,898	1,687,985	321,474
Nov. 5, 1877	934,374	2,643,502	166,949	368,429	1,170,759	326,388
May 7, 1877	761,686	468,809	193,046	174,573	347,881	291,654
Jan. 8, 1877	3,668,910	3,077,504	841,750	905,615	1,088,104	425,406
Dec. 1, 1876	3,110,283	3,385,554	219,841	879,310	1,182,822	512,041
Jan. 10, 1876	5,802,293	663,962	100,741	325,191	1,030,300	307,488

5. *Tide-water Receipts at Albany, from opening of navigation to Dec. 4:*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Malt.* bush.
'78	13,400	26,486,006	25,167,800	2,103,600	3,192,300	5,062,500	486,800
'77	29,100	12,745,700	23,631,100	1,282,700	5,530,900	4,228,700	607,500
'76	37,100	11,801,100	11,286,600	762,700	3,856,000	3,167,900	735,600
'75	113,600	21,335,200	8,531,800	250,900	3,833,600	3,109,300	659,800

CURRENT WHOLESALE PRICES.

	Nov. 13.	[Dec. 13.
PRICE OF GOLD	100 1-8	101 1-8
FLOUR—Super to Extra State, ₩ bbl	$3 15 @ 4 25	$3 15 @ 4 25
" Super to Extra South'n, ₩ bbl	3 25 @ 5 75	3 15 @ 5 75
" Extra Western	3 70 @ 3 50	3 70 @ 3 75
" Extra Genesee	3 85 @ 5 50	3 85 @ 5 50
" Superfine Western	3 15 @ 3 65	3 15 @ 3 65
RYE FLOUR, Superfine	2 90 @ 3 45	2 85 @ 3 30
CORN-MEAL	2 20 @ 2 85	2 15 @ 2 85
BUCKWHEAT FLOUR, ₩ 100 lbs	1 70 @ 2 00	1 60 @ 1 90
BUCKWHEAT, per bush	— @ 50	47 @ —
WHEAT—All kinds of White	96 @ 1 12	1 00 @ 1 11
All kinds of Red and Amber	75 @ 1 08	78 @ 1 08
CORN—Yellow	47 @ 63	45 @ 63
" Mixed	42 @ 47	42 @ 47
" White	50 @ 63	45 @ 63
OATS	28 @ 40	28½@ 37½
RYE	58 @ 63	55 @ 62
BARLEY	75 @ 1 25	75 @ 1 25
HAY—Bale, ₩ 100 lbs	80 @ 75	25 @ 75
STRAW, ₩ 100 lbs	20 @ 45	25 @ 45
COTTON—Middlings, ₩ lb	9¼@ 9¼	8¾@ 9¼
HOPS—Crop of 1878, ₩ lb	8 @ 15	5 @ 15
" " 1877, ₩ lb	5 @ 8	4 @ 6
" olds, ₩ lb	1 @ 4	1 @ 3
FEATHERS—Live Geese, ₩ lb	35 @ 55	35 @ 50
SEED—Clover, West. & St. ₩ lb	6¾@ 7¼	6¾@ 7¾
" Timothy, ₩ bushel	1 20 @ 1 25	1 20 @ 1 30
" Flax, ₩ bushel	1 37 @ 1 40	1 40 @ —
TOBACCO, Kentucky, &c., ₩ lb	2½@ 14	2½@ 11½
" Seed Leaf, ₩ lb	3½@ 50	3½@ 45
WOOL—Domestic Fleece, ₩ lb	20 @ 43	20 @ 42½
" Domestic, pulled, ₩ lb	20 @ 38	20 @ 38
" California	12 @ 27	12 @ 27
TALLOW, ₩ lb	6½@ 6¾	6¾@ 6¾
OIL-CAKE—₩ ton	27 50 @28 00	28 00 @ —
PORK—Mess, ₩ barrel	7 45 @ 7 90	7 80 @ 7 60
" Extra Prime, ₩ barrel	— @ —	— @ —
BEEF—Extra mess	10 50 @11 00	10 50 @11 50
LARD, in tcs. & bbls, ₩ 100 lb	6 15 @ 6 60	5 80 @ 6 37½
BUTTER—State, ₩ lb	12 @ 23	12 @ 27
" Western, poor to Fcy. lb	7 @ 27	7 @ 27
CHEESE	3½@ 9¼	3 @ 8
EGGS—Fresh, ₩ dozen	24 @ 28	23 @ 26
POULTRY—Fowls, ₩ lb	8 @ 14	7 @ 14
" Chickens, Penn., ₩ lb	12 @ 14	11 @ 14
Turkeys—₩ lb	9 @ 13	7 @ 12
Geese, ₩ pair	1 00 @ 1 50	1 12 @ 1 50
Ducks, ₩ pair	45 @ 90	40 @ 90
" ₩ lb	— @ —	9 @ 13
DUCKS, Wild, ₩ pair	20 @ 1 50	40 @ 2 25
CHESTNUTS—₩ bush	3 50 @ 4 50	3 25 @ 4 00
HICKORY NUTS—₩ bush	2 00 @ 2 50	2 25 @ 2 50
APPLES, ₩ barrel	62 @ 2 00	1 00 @ 2 00
GRAPES, ₩ lb	6 @ 20	6 @ 20
QUINCES, ₩ bbl	2 00 @10 00	— @ —
CRANBERRIES—₩ bbl	5 00 @ 7 00	5 00 @ 9 00
BEANS—₩ bushel	1 50 @ 2 10	1 50 @ 2 20
PEAS—Canada, in bond, ₩ bu	70 @ 72	75 @ 75
POTATOES, ₩ bbl	1 75 @ 3 00	1 75 @ 3 00
" Sweet, ₩ bbl	1 00 @ 1 50	1 25 @ 2 25
TURNIPS ₩ bbl	75 @ —	75 @ 87½
BROOM-CORN	4 @ 6	4 @ 5½
CABBAGES—₩ 100	2 00 @ 5 00	2 50 @ 5 00
ONIONS—₩ bbl	1 00 @ 1 50	1 50 @ 2 25
CELERY, per dozen	75 @ 87	75 @ 1 00

Gold closes at 100⅛, as against 103 on Dec. 12, 1877. Resumption of specie payments is fixed by law for Jan. 1, 1879, and the Treasury Department and the Banks are shaping their financial policy accordingly. Little, if any, disturbance of business interests is apprehended from resumption measures. On the 7th inst., the State Canals were officially closed, bringing to an end an unusually active and prosperous season of canal navigation....Cable advices have been of a depressing tenor, as a rule, and have tended to check operations in Produce, and to weaken values. Less export inquiry has been reported for the leading articles, and the home trade call has been on a moderate scale. Inland and ocean freights have declined sharply and left off heavily....Flour has been offered more freely, and has been more or less variable in price, closing weak, on a comparatively tame movement, chiefly for home use. Rye Flour declined and closed in favor of buyers, the available supplies having been considerably in excess of the requirements of purchasers. Corn Meal has been sparingly dealt in, yet has otherwise shown little change. Wheat has been less active, and quoted lower, though on the later transactions exhibiting a stronger range on winter grades, which closed up in better request, in good part for shipment to the Continent, whence the demand is mostly for better qualities of White and Red. Corn has been quoted cheaper on a less important business. Rye has been less sought after, closing heavily. A restricted movement has been reported in Barley, which, however, has been held more confidently toward the close. Canada Peas have been in some demand, and have been advanced slightly in price. Oats have been less freely purchased and quoted lower, White closing more steadily, while Mixed left off depressed and irregular....A further sharp decline occurred in Cotton, which has been less inquired for....Provisions have further receded in price, closing weak, and without notable animation....Wool has been moderately sought after, and has been quoted generally about steady....Tobacco has been in fair demand within our previous range....Seeds have been in rather better request at the ruling figures....Hops have been quoted lower on free offerings, leading to a more liberal business, largely for export, mostly for London ...Hay and Straw have been comparatively quiet.

New York Live-Stock Markets.

RECEIPTS.

WEEK ENDING	*Beeves.*	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Nov. 18	9,389	200	2,096	21,682	45,975
Nov. 25	9,675	154	2,162	16,590	54,582
Dec. 2	8,171	180	1,670	26,270	53,096
Dec. 9	10,698	123	1,851	25,779	57,960
Total for 4 Weeks	38,133	657	6,779	93,301	211,613
do. *for prev. 4 Weeks*	41,831	500	11,982	134,119	197,857

	Beeves.	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Average per Week	9,533	164	1,695	23,325	52,904
do. do. *last Month*	11,207	127	2,995	33,529	49,464
do. do. *prev's Month*	12,104	71	3,011	32,622	51,068

The prices for the past four weeks were as follows:

WEEK ENDING	*Range.*	*Larger Sales.*	*Aver.*
Nov. 18	6 @10 c.	7¼@ 8¼c.	7¾c.
Nov. 25	6¾@10 c.	7¾@ 8¾c.	8 c.
Dec. 2	6½@11¼c.	8 @ 9¼c.	8¾c.
Dec. 9	6¾@10¾c.	7¾@ 9 c.	8¼c.

Beeves.—The range of prices show the condition of business for the past month. At the close, the market was weak and prices fell off considerably. Extra cattle brought 10¾@10¾ for a dressed weight of 57 lbs. to the 100; native steers of 56 to 57 lbs., sold for 9¼ to 10c. per lb.; Colorado steers brought 7¾@8c. per 55 lbs. to the 100, and dry cows and bulls 2¾@4½c. per lb. live weight ....**Cows** have been without change, selling according to quality, for $28.50 to $70 per head....**Calves** have sold steadily on a dull market, with slightly lower prices; grass calves brought 2¾@3¾c. per lb., and prime milk calves 5@7c. per lb. live weight....**Sheep** have declined on a quiet market, closing at 4@5¼c. per lb. for common to choice; dressed mutton sold at 6@8c. per lb...**Swine** have sold at 3@3¼c. per lb. for live, and 3¾@4c. per lb. for dressed; the market closes dull and weak.

What Good Seed and Cultivation Will Do.

138 bushels of Wheat to the Acre.

The low average yield of wheat in this country is due to various causes. Lack of proper cultivation, soils rendered sterile by long cropping, poor seed, etc. The work of careful experimenters and progressive farmers, is teaching us that attention to these details marks the path to success in wheat growing. We have recorded many accounts of unusual yields, due to drill cultivation, and superior seed, but the reports of the competitors for the wheat premiums offered by Messrs. B. K. Bliss & Sons, excel anything else we have seen in this line. The premiums, as announced in the *American Agriculturist*, last Spring, amounted to $250, and were for the 1st, 2nd, 3rd, and 4th largest quantities, grown from one pound of the "Champlain," and "Defiance," respectively, and for the best 20 heads of each variety. These were Spring wheats, originated by hybridization, by Mr. Pringle of Vermont, who had previously been very successful in bringing out new varieties of potatoes. The prize winners were: For "*Champlain*," 1st premium, A. J. Scoggins, Tulare Co., Cal., 791 lbs., from 1 lb. of seed.—2nd, John Brakefield, Stearns Co., Minn., 484 lbs.—3rd, A. Monquin, Davis Co., Ill., 405¾ lbs.—4th, Alfred Rose, Yates Co., N. Y., 295 lbs.

"*Defiance.*"—1st J. Brakefield, Stearns Co., Minn., 523 lbs., from 1 lb. of seed.—2nd, A. Monquin, Davis Co., Ill., 465½ lbs.—3d, David Brothers, Denver, Col., 342 lbs.—4th, A. G. Hickerson, Plumas Co., Cal., 316 lbs. Calculated according to the areas of the plots, one of these experimenters got at the rate of 126 *bushels of wheat per acre*, and none of the winners less than 55. One competitor planted his seed in drills 6 inches apart, and two feet between every alternate row. Reckoning only 8 inches between the drills, this competitor states that his plot occupied only 1/44 of an acre, and that accordingly his yield was at the rate of 334 *bushels per acre*. These results were of course due to the superior quality of the seed to a considerable degree, but largely, doubtless, to the methods of cultivation adopted. Most of the prize winners planted the seed in drills, 8 to 16 inches apart, placing the kernels 4 to 6 inches apart in the row, and then cultivating the crop as they would a choice cornfield. The ground was also carefully prepared, and the whole treatment the best. The unusual yields are indications of what wheat-growers may expect, when they adopt the methods which these and similar experiments teach are the ones that lead to success. Readers will remember that our publishers have a small amount of these varieties of wheat for distribution. See Premium List.

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from p. 7.

In justice to the majority of our subscribers, who have been readers for many years, articles and illustrations are seldom repeated, as those who desire information on a particular subject can cheaply obtain one or more of the back numbers containing what is wanted.

Back numbers of the "American Agriculturist," containing articles referred to in the "Basket" or elsewhere, can always be supplied and sent post-paid for 15 cts. each, or $1.50 per volume.

Our Dairy Interests.—Their Magnitude.—In the various addresses at the Dairy Fair, these statements were made: The cows of the country and the land they are kept on, are valued at over Thirteen Hundred Million Dollars ($1,300,000,000)!—The annual butter and cheese products, is $50,000,000 greater than the value of the wheat crop. During the 12 years past, we have *exported* over one billion pounds of cheese, or 85,000,000 lbs. a year, or about 271,300 lbs., for every working day.

Keeping Potatoes.—The French hotel and restaurant keepers are said to preserve their supplies of potatoes in the following manner: The tubers are first washed, and then, a few at a time, by means of small baskets, are plunged into boiling water, and held there for four seconds; they are then dried and stored. This treatment destroys the vitality of the buds or "eyes," and there is no tendency to sprout, but the potatoes keep sound and of good flavor, until the next crop comes in.

Indian Corn.—It does not seem possible for an Englishman to understand the *nomenclature* of maize. A recent "Gardeners' Magazine," speaking of the manufacture of sugar from the "stems" of Indian Corn says: "As a matter of course, the grain must be sacrificed to secure the sugar, for as the cobs swell, the canes become less and less sweet." Swelling of the cobs, indeed!

Earthworms in Pots.—A correspondent of the "Revue Horticole," says that watering with a cold strong infusion of Horse-Chestnuts will kill earthworms. We have always thought that Horse-Chestnuts would turn out to be good for something.

Wire Bed Mattresses are among the best additions of recent inventions to comfort and rest, and they are quite as important to hard-working people, whether farmers or others, as they are to more leisurely people. We have practically tested different kinds, and are now enjoying one made by the National Wire Mattress Company, of New Britain, Ct. With its strength, durability, and elasticity, we do not see how it can be improved.

Petunias and Potato Bugs.—The statement went the rounds of the papers that the Petunia planted among the potato vines, would be eaten by the potato-beetle in preference to the potato, and the insect would be killed. The Petunia belongs to the same botanical family with the potato, and the statement looked very improbable. Our correspondent, "H. N. S.," South Sudbury, Mass., tried the matter, and, finding that the insects would not take to the Petunia from choice, confined them to that, and when forced to do so, they fed upon the Petunia leaves, and the diet did not appear to disagree with, much less prove poisonous to them.

Northern Michigan.—A correspondent writes that the crops in Northern Michigan were excellent, and that the farmers had good fall weather for securing them. Lumbermen expect a favorable winter for their work, and say that if it should prove to be, there will be more logs "barked" this season than ever before.

Poultry Exhibitions should be conducted impartially, though they often are not. If they could be, there would be greater interest in poultry raising. The real standard of merit is not ownership or breeding, but quality. The judges who can stick to this point, and be untrammeled by prejudice of "strain" are those who will be in the front rank. "No favoritism; the *birds* to win," should be the motto of judges at the poultry exhibitions; then, and not till then, will farmers and amateurs become regular exhibitors. I. K. F.

Cow-Milkers in New Zealand.—Mr. John Lambie, a New Zealand subscriber, sends an account of his experience with cow-milkers: "Some eight years ago I saw an advertisement in an Ayrshire paper, setting forth the merits of the milkers; so I wrote to Mr. John Drummond, of cheese-making celebrity, in Ayrshire, in reference to it. He sent us 2 or 3 sets, and I gave them a very careful and patient trial, extending over two years. The result of my experience is that the milkers (I refer to the "silver tubes") will never prove entirely satisfactory. Although used with the greatest care, the teats of some cows became inflamed and swollen. It varied in effect with the degree of coarseness in the animal. Fine-skinned cows were easily irritated, while coarse and thick-skinned animals were not affected, except by a decreased flow of milk from the continual use of the tubes. The inside of the teat would appear to be of such delicate structure, that no foreign substance, however skillfully formed, can possibly be introduced without producing irritation. I noticed some cases where, after the irritation had subsided, the inside of the teat appeared callous and hard, as if nature was making an effort to accommodate herself to the altered circumstance; this was also accompanied by a less flow of milk. That the milkers are useful in case of an accident to the teat when it would be impossible to squeeze it by hand, I can personally vouch for."

Wire-Binders to the Rear.—There has been much complaint from farmers that the straw from harvesters that use wire-binders contains bits of wire that get into the animals' stomachs and causes serious injury. The millers, also, have tabooed the wire-binders, as shown by the following resolutions, adopted by the Minneapolis Miller's Association:

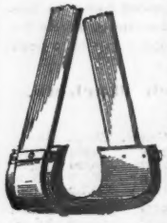
WHEREAS, The committee appointed by this association to examine into and report upon the damage to mill machinery, arising from the use of wire-binders for wheat, having rendered a report recommending the discontinuance of the use of said wire-binders, and said report having been accepted by this association, therefore, be it *Resolved*, That, whenever practicable, a difference of ten cents per bushel, under corresponding grade, be made in the purchase of any wheat containing wire. And be it further *Resolved*, That we most earnestly recommend the discontinuance of the use of wire-binders for binding wheat.

The Lancaster Butter-Carrier.—No matter how good butter may be, if it reaches the market in a soft and unpresentable condition, it can not sell for the best price. We several years ago figured one form of butter-box or pail, in which ice was used at each end, but this was more especially intended for those who take their own butter to market. In the Lancaster Butter-Carrier, we have a contrivance, on a similar principle, in which butter may be sent by express. The butter is to be made into pound prints, wrapped in muslin, and each print dropped into a tin cup of the proper shape; these cups fit into a case holding four dozen or any desired number. The peculiarity of the carrier is, that one cup or several may be replaced by water-tight cans containing ice, and the temperature kept low until the butter reaches its destination, when the ice-cans are refilled. This common-sense affair is advertised elsewhere by E. L. Resh.

Longest Tunnel in the World.—Eleven years ago, we passed from Southeast France over Mount Cenis, into Italy. The road zig-zagged up mountain sides, and through defiles, until we crossed a notch in the summit, 6,773 feet high, where the snow never melts. Ten hours time, and 21 horses used in relays, were required to get our carriage holding six persons, half of them children, over to Suza. Five years ago, we went *through* the mountain in 30 minutes, in a railway carriage, so well lighted and running so smoothly that but for the guide-book we should hardly have known we were under a mountain at all.—Look on the map and find Luzerne in North Central Switzerland, and Lake Maggiore in Northern Italy. Eleven years ago, in passing between these two places, we used three days' time, and more horses than we can remember. The road at the St. Gothard Pass reached an elevation of nearly 7,000 ft., where the snow remains all summer. Now they are building a railroad between these two places, and to get it through they are digging a Tunnel *under* St. Gothard, which is to be 48,936 feet, or over 9 miles long—the longest one in the world. There are other tunnels enough to make nearly 23 miles of tunnel in 108 miles of railroad. The cost of this railroad is to be nearly $60,000,000. Through this highway is to pass the immense traffic between the two great nations of Germany and Italy. In going over from Luzerne in 1867, we met hundreds, probably thousands, of heavy, slow-moving wagons, plodding up the steep road, loaded with freight, passing from Italy to Germany. At least hundreds of them were laden with silkworm cocoons, taking them to Germany to be transformed into silken thread and fabrics; other hundreds of wagons carried casks and barrels of Olive Oil.

Healthful or Healthy.—A common mistake is the use of the word healthy for *healthful*. Many kinds of food may be in a very healthy condition and yet not be *healthful* for a sick person, or a well one even. *Healthful* food, *healthful* exercise, *healthful* air may all contribute to put a person in a *healthy* condition. Healthy refers to the condition of a person; *healthful* to the quality in an object, in a food for example, which will help to put or keep a person healthy.

A Safety Stirrup.—"H. R.," Springfield, Mo., suggests an improvement on the ordinary form of stirrup, which he thinks would be less liable to catch the foot in case of accident. The foot-rest is of wood or iron, but only extends across the bottom and up the sides of the foot. The strap forms a loop in which the wooden or metallic portion rests, as shown in the engraving. A projection from the bottom may be turned up at the end to prevent the foot from passing through the stirrup.



Wheat in Northern Minnesota.—"A. B.," Clay Co., Minn. To grow more than 15 to 20 bushels of wheat per acre without manure, you probably need to prepare the land better, and to cultivate the growing crop. As you only raise spring wheat, begin by plowing the land thoroughly in the fall, then plow again early in spring (if you did not plow last fall, plow twice next spring), and thoroughly pulverize with the harrow. Sow the wheat in drills 12 to 16 inches apart, using three pecks of seed to the acre; then cultivate the growing crop with some such implement as Travis' Wheat-Hoe. Similar practice to this has doubled the crop in a number of cases that have come to our notice. It should be remembered, however, that no amount of cultivation can take the place of fertility, either natural or supplied.

The American Cotswold Record, edited by Chas. P. Willard, Chicago, Ill., and published by the American Cotswold Association, of which the Editor is Secretary. This is an exceedingly neat volume, giving over 500 pedigrees, engravings of several noted sheep, and an essay on Cotswold sheep by the Hon. Chas. P. Mattocks, of Maine. This being the first volume, can be regarded as only a beginning, as the number of owners is very small and does not include the names of several well-known breeders of Cotswolds that we shall expect to see in another volume.

Lucern or Alfalfa in Canada.—"S.," in Ontario, adds his own experience to what we have already given. He says: "In the spring of 1876, a friend in California, sent me a pound of seed, which I sowed on about $^1/_{16}$th acre, in drills 10 to 12 inches apart. It came up nicely, was kept clean that season and hoed once in the spring of 1877, since which, no cleaning has been needed. In 1877, it was cut twice (a portion three times), both crops being very good. It was manured in fall of 1877, and this year (1878), there have been four good cuttings, one very heavy, and the rest each apparently equal to a good crop of clover. I can not give weight of crop, as it was all fed green to working-horses, which thrived well upon it, and appeared to like it better than anything else. I had no hope that it would succeed on my land, which is stiff clay with a northern exposure. It has, so far, stood the winter well. My little bit of experience is decidedly favorable, and if I were farming, I would try it more extensively. It is quite possible that, as suggested by Mr. Chapman, one, and the chief cause of success, is the use of Californian seed, as European seed has been tried in this neighborhood without any encouraging results."

A Wisconsin Cheese.—Cheese-making, to judge by the display made at the recent Dairy Fair by Wisconsin, promises to become a leading industry in that State. On the last evening of the Fair we had the company of a large exporter of Cheese, who, having no interest in the samples examined, gave an impartial opinion as an expert, as we passed around, freely using the tryer. He returned several times to a lot that had no mark to indicate where it was from, and at last remarked: "Whatever the judges may decide, that, in my opinion, is the best cheese here." We afterwards found that the cheese was made in June, 1878, by Clark & Reynolds, Oakland, Jefferson Co., Wis., and was exhibited by Blackwell & Co., New York, to show the keeping qualities of their cold warehouses, the cheese having been stored there since July 27.

A Good Corn-Sheller is "Adams' Self-Feeding Power Corn-Sheller," advertised by the Sandwich Manufacturing Company. This was invented 20 years ago, hence is one of the oldest. It is built to do a great amount of work; is fitted with elevator and cob-stacker, and requires 2 to 6 horses to drive it. Its operation is much the same as that of hand-shelling, so that the corn is not broken or crushed. This company also make shellers for mill and small farmers use, also the "Young Samson" horse-power, a compact and convenient apparatus.

Florists, Look Out!—There is a chap calling himself Beaubien, who is going among florists and taking orders for "Double Yellow Petunias," "Yellow Verbenas," and other remarkable novelties. He claims that his stock is being cared for by some florists in South Framingham, Mass., who are much annoyed at the use of their name by this scamp. The fellow takes orders for half cash down and half on the delivery of the plants—which, of course, never happens. It is a wonder to us that he can find any florists to believe his statements.

Cure for Roup.—"I. L. R.," N. Y., recommends pine tar applied externally and a few drops in the throat as a remedy for roup.

Early Fruiting Peaches.—J. O. Nixon, Harrison Co., Miss., wrote that on July 12th he ate a peach from a tree which fruited when but a year old. The seeds were sown in the fall of 1876, the plants came up in the spring of '77, and when 4 to 6 inches high, about 70 young trees were transplanted to his nursery. Last spring many of these trees bloomed and set fruit, all of which, save two peaches to a tree, were picked off. He had still eight trees with fruit that promised to ripen.

A Good Knife for 50 Cents is advertised by Maher & Grosh, Toledo, O. We have whittled with one of these knives, and find it to be a very good thing. A poorer knife than this has often nestled in our pocket-cut our fingers, skinned musk-rats, cored apples, and been swapped for marbles and fish-lines, when the writer was a boy. Those who send 50 cents for this knife will more than likely get their money's worth.

Patent Machine Rolled Horse-Shoe.—This shoe, patented by John D. Billings, is made from a bar of steel so rolled as to form two pieces at right angles to one another; when this is bent to form a shoe, there is a continuous calk below, and a continuous edge above the web or platform upon which the foot rests. The shoes are very easily fitted; it is claimed that they are easier to the foot than the old form of shoe, and that they give a more uniform bearing. The shoes are highly commended by those who have tried them.

New and Good Music can be had very cheaply by subscribing to "The Portfolio," a monthly journal published in Boston, and which has long been advertised in our columns. The December number gives eight selections, vocal and instrumental, besides all the current news and gossip in the musical and other arts.

The American Agriculturist Clubbed with Other Journals.

In response to numerous requests from our subscribers, relative to obtaining the *American Agriculturist* in connection with other publications, we have made arrangements with a few of the leading Magazines, which will be forwarded in combination with our Journal as follows: [Postage additional when sent to foreign subscribers.]

American Agriculturist with	*Regular price for both.*	*The 2 supplied, postpaid, by us for*
Scribner's Monthly ($4.00)	$5.50	$4.75
Scribner's St. Nicholas ($3.00)	4.50	3.90
Demorest's Monthly ($3.00)	4.50	3.90
Harper's Monthly ($4.00)	5.50	4.75
Harper's Weekly ($4.00)	5.50	4.75
Harper's Bazar ($4.00)	5.50	4.75
Appleton's Journal ($3.00)	4.50	3.90
Popular Science Monthly ($5.00)	6.50	5.50
Atlantic Monthly ($4.00)	5.50	4.75

On receipt of subscriptions as above, we deliver the names and pay to the offices of publication of the magazines ordered, and should there ever be occasion for complaints of non-receipt of such magazines, these should be made direct to their respective Publishers, and not to us.

For All Our Readers.

"THE

Farmer's Pride."

Fine Pictures add greatly to the attractiveness and cheerfulness of every home, however lowly it may be. **More than 250,000 excellent Chromos,** almost equal to Oil Paintings, such as the "Strawberry Girl," "Mischief Brewing," etc., now adorn the dwellings of the readers of the *American Agriculturist*, to whom they were sent exclusively. These are vastly superior to the cheap, dauby pictures subsequently scattered through the country, and which led us to cease distributing Chromos altogether.

We are happy to announce that we can now supply all the *bona-fide* subscribers of the *American Agriculturist* for 1879 with a *Superb Steel Plate, Line Engraving*, entitled "THE FARMER'S PRIDE," painted by the eminent Landscape Painter, JEROME THOMPSON, and Engraved on Steel by MARSHALL, whose great portraits of Washington, Lincoln, and others, have achieved for him A WORLD WIDE REPUTATION.

The eminent French artist, Gustave Doré, styles him "the Master of Art in America," and European critics have united in pronouncing his portrait of Mr. Lincoln **the finest specimen of lineal art produced in this century.** Mr. Marshall regards this last work, "The Farmer's Pride," **equal to any of his previous efforts,** and it will unquestionably be so regarded by judges. The cost for engraving a *steel* plate ranges from One Hundred Dollars upward, according to the artistic execution, fineness, and size. Mr. Marshall receives

Three Thousand Dollars

for engraving *this* picture, which of itself indicates the excellence and value of the work.

The usual price of steel-plate line engravings of the *size* and *character* of "The Farmer's Pride," **is Ten Dollars, but**

To all *bona-fide* subscribers of the *American Agriculturist* for 1879, we **will supply a splendid Copy of the Farmer's Pride, at our office, together with the Paper, one year post-paid, for $1.63,** or $1.70 when the picture is forwarded by mail, post-paid, securely rolled and protected in a mailing-tube, free of any extra charge.

That is to say, we will send the *American Agriculturist* for 1879 to *bona-fide* subscribers, together with Marshall's elegant Steel Plate, Line Engraving, "The Farmer's Pride" (price $5.00), for $1.70, all postage prepaid.

OR,

When the engraving is delivered at our office, 245 Broadway, we will furnish the paper, postage for the year prepaid, and the engraving for $1.62. We make this

EXTRAORDINARY OFFER,

because of our desire to place this beautiful picture in the homes of all our subscribers, and at the same time to increase the number of these subscribers for 1879 to a round

TWO HUNDRED THOUSAND.

Though the *American Agriculturist* at the reduced price ($1.50 per annum), is cheaper than any similar journal in the world, and richly worth treble the price of the subscription, we cheerfully supply this magnificent engraving **at a great expense to ourselves,** believing that we shall be recompensed for so doing in the satisfaction afforded, and in the increased interest and efforts for the paper, of those subscribers who share in the distribution.

"THE FARMER'S PRIDE"

is executed in the **highest style of art on fine plate-paper,** *Twenty-Two* Inches by *Twenty-Eight* Inches. Some idea of the estimation in which the artist and the picture are held, may be had from the fact that thirty artist proofs of this engraving, with the signature of the Artist, have been subscribed for at **Twenty-five Dollars each.**

RECAPITULATION.

The *American Agriculturist* for 1879 postage prepaid, (14c. extra in New York City). **$1.50**

"The FARMER'S PRIDE" to other than Subscribers (postage prepaid)..... **$5.00**

The *American Agriculturist* and "THE FARMER'S PRIDE" to one address, (postage prepaid on both)..... **$1.70**

The two, when the picture is delivered at our office, 245 Broadway,..... **$1.63**

No person other than a Subscriber can procure this picture at less than $5.00. It is now on exhibition at the reception rooms of the *American Agriculturist*, 245 Broadway. The Engravings will be issued as rapidly as possible, and subscribers will be supplied in the order of their application.

The Steel-Plate to Subscribers in Clubs.

To accommodate our subscribers who send in their names in clubs, at club rates, we subjoin the following offers:

Four Subscribers for 1879, and *Four* Engravings, all *post-paid*, for..... $5.80

Six Subscribers for 1879, and *Six* Engravings, all *post-paid*, for..... 8.20

Ten Subscribers for 1879, and *Ten* Engravings, all *post-paid*, for..... 12.00

To Clubs of *Ten* Subscribers, post-paid, and *Ten* Engravings taken at the Office, or forwarded by Express in one package, expressage unpaid..... $11.20

☞ Clubs *above Ten* at the same proportionate rates.

The Steel-Plate Engraving for PREMIUM CLUBS.

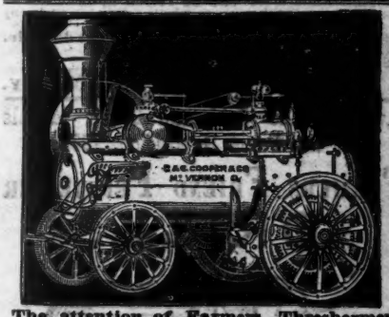
Owing to the necessarily large expense of furnishing the Steel-Plate, it was at first intended to limit its offer to subscribers paying the full price of $1.50 a year, and a small addition, and where no other premiums were given. But we have finally decided to place all subscribers, as nearly as possible, upon equal footing, and we therefore make the following offers to all who are collecting lists of subscribers for Premiums:

Subscribers in Premium Clubs for 1879, on the terms in the table on the last page of this paper, and in the General Illustrated Premium List, published in November, can *each* of them have the Steel-Plate Engraving, by adding only 20 cents for each name, to cover cost of packing, postage, etc., on the Engraving; Or only 13 cents each, when the Engravings are to be sent by Express, *unpaid*, in a single parcel, to one individual.

A NEW PREMIUM—And a Pocket Revolver, Cheap.—So many write us for good, low-priced revolvers, that we have arranged to supply those who want them, thus: 1st—A first-rate, steel-barrel and lock, *nickel-plated*, 7-shooter **Revolver,** Calibre 22-100. Made at the celebrated Remington Arms Works, weight 7 ounces. It is as good as any made for anything like the money, and good enough for anybody who wants such an implement. We have fired one 100 times, and found it work perfectly. It will be sent free to any part of the United States, post-paid, by mail, to any one sending only 5 subscribers to the *American Agriculturist*, at $1.50 a year, or 10 subscribers at the 4-club rate of $1.25 a year. [Or it will be forwarded free by mail, on receipt of $2.50. It is as good for use as any $5 or $10 revolver of like calibre.] **2d.**—A larger 5-shooter Revolver, nickel-plated, calibre 32-100, weight 11 ounces will be presented for 7 subscribers, at $1.50 each, or 12 at $1.25 each, delivered free, as above. [Or it will be forwarded free, as above, on receipt of $4.]

A Chance for Making Money.

During the next three months thousands of farmers and others in every part of the country will have more or less leisure time, which they can profitably employ in procuring subscriptions to the *American Agriculturist*. We are confident that almost everybody who sees the splendid Steel-Plate Engraving given to subscribers on payment of packing, postage, etc., will subscribe to the paper, in order to secure it. But the paper itself is worth five times more than the subscription price. The cost of the paper hitherto has been $1.00 for single subscriptions. Now for $1.70 both the Picture and the paper for 1879 are sent post-free. With the picture in one hand, and copies of the paper in the other, canvassers ought to be able to *daily* obtain a number of subscribers among their friends and neighbors. For any further particulars desired, address Orange Judd Co., 245 Broadway, N. Y.



The attention of Farmers, Threshermen, and responsible Live Agents, and Agricultural Implement Dealers in all parts of the Country is invited to our

Traction or Self-Propelling FARM ENGINES.

By a simple but reliable attachment made to our Common Farm Engines, we are able to offer a Traction, or Self-propelling Farm Engine, which not only propels itself, but hauls a Water Tank and Separator, or loaded Wagon, over any road, up hill, or down, with the aid of one pair of horses. These Engines have been thoroughly tested three seasons. Three hundred of them are now in use, and they have not only proved a complete success, but have given such excellent satisfaction that, where introduced, it is with difficulty any other engine can be sold. They cost but little more than the common Farm Engine, and enable the threshermen to operate with from two to four less teams, and move much faster than with horses. They are simple in construction, easily handled, durable, and their advantages over the common Farm Engine are so apparent, *we are confident* they are destined to take the place of other Engines used for threshing, or for any use where the engine and machinery employed has to be frequently moved. Circulars containing cuts, description, prices, and testimonial letters from our customers, furnished free to all applicants. Agents and Dealers will readily appreciate the advantages this Engine offers them. **Agents wanted** in every County in all the States and Territories.

For agencies or circulars apply to

C. & G. COOPER & CO., Mt. Vernon, Ohio.

Established in 1840.

Eureka Safety Power.

h.p.	cyl.	ft. space.	wt. price.	
2	3½x4	48 in	40x25	900 $ 150
4	4x6	58	48x30	1400 250
6	5x7	72	72x42	2700 350

Also **Spark Arresting Portables,** *and* **Stationary Engines** *for Plantations.* Send for Circulars.

B. W. PAYNE & SONS,
Corning, N. Y.

Say where you saw this advertisement.

SKATES.

In every land where water freezes, the **Barney & Berry** skates are known.

We will *deliver free of charges*, to any address east of the Mississippi River, and at more distant points, for a trifling addition, any pair of these celebrated skates.

New York Club.—Steel 9 to 11½ inches. Prices delivered; Blued, $2.50; Nickled, $3.75.

All Clamp.—Sizes 9 to 11½ inches. Price delivered; Blued, $2.50; Nickled, $3.75.

Genuine Club.—Sizes 7 to 12 inches. Price delivered, $3.00; Nickled, $4.00.

Keyless.—Patent-lever screw skate; size 8 to 12 inches. Price delivered; Blued, $4.50; Polished and Nickled, $6.50.

Ice King.—Sizes 8 to 12 inches. Price delivered $6.25. Polished and Nickled, $7.00.

Ice King Rink.—Sizes 8 to 12 inches. Price delivered, $7.88; Polished and Nickled, $8.75.

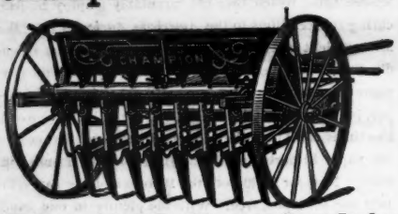
In ordering, please state size of boot or shoe worn. **Send for complete price-list.** Address,

SPORTSMAN'S DEP'T., ORANGE JUDD CO.,
245 BROADWAY, N. Y.

Champion of the World!

THE

Champion Grain Drill.



With or without Fertilizer, or Grass Seeder Attachments, or Gum Spring Hoes.

It has a **perfect force feed** Grain Distributor that will sow accurately all kinds of grain without the least injury to the seed.

UNEQUALED AS A CORN PLANTER.

Fertilizer attachment **can be relied upon** to sow all kinds of commercial manures whether dry or damp in any desired quantity.

Draft Light, Construction Simple, but durable.

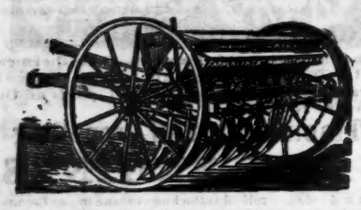
Liberal discount to cash customers.

Send for descriptive circular.

JOHNSON, GERE & TRUMAN, Owego, Tioga Co., N. Y.

Awarded the Gold and Silver Medals at the Paris Exposition, 1878.

FARMERS FRIEND FERTILIZER DRILL.



The highest honors at the World's Fair, at Philadelphia, 1876, and Paris, 1878, crown it the leading Drill of the world.

The **Cone Gearing** and **Double Force Feed** always give it preference on trial with any other.

We make plain, fertilizer or spring hoe Drills of any size, with Force Feed Grass Seeder. Patent Hoe Shifter and Surveyor free.

Greater inducements to purchasers for 1879 than ever.

For circulars, etc., mention this paper, and address

FARMERS FRIEND M'F'G CO., Dayton, Ohio.

THE REASONS WHY

Stock Feeders, Raisers & the Public

WANT THE

J. I. CASE & CO.'S

TREAD & SWEEP POWER MACHINES.

THEY CUT 10 Tons Hay per Day.
THEY GRIND 5 Tons Feed per Day.
THEY SAW 18 Cords Maple-wood per Day.
ELEVATOR MEN say They are the Best made.
WELL DRILLERS need them in a "Dry and Thirsty Land."
CORN SHELLERS Run like a Top with them.
FOR SHOPS, Mechanics can Saw, Mortice, and Bore.

J. I. CASE & CO., Racine, Wis., Manufacture **Portable** and **Traction Engines,** and Threshing Machinery with the latest and best improvements—including **APRON & ECLIPSE SEPARATORS, WOODBURY & PITTS POWER.**

Manufacture and sell annually more Threshing Machines than any Firm in the World!

☞ SEND FOR CATALOGUE.

KING OF HARROWS

BRADLEY'S REVERSIBLE HARROW.

Two Harrows in One,

And sold at the price of one.

A Perfect Smoothing Harrow,

Combined with a vertical or straight tooth.

BRADLEY & CO.,

Syracuse, N. Y., and Chicago, Ill.

Nichols, Shepard & Co.,

BATTLE CREEK, MICH.,

Makers of the Original and only Genuine **"Vibrator" Threshers, Mounted Horse Powers, Steam Thresher Engines and Steam Outfits complete.** Illustrated Circulars sent free.

HEEBNER'S HORSE POWER

WITH

PATENT LEVEL TREAD

AND

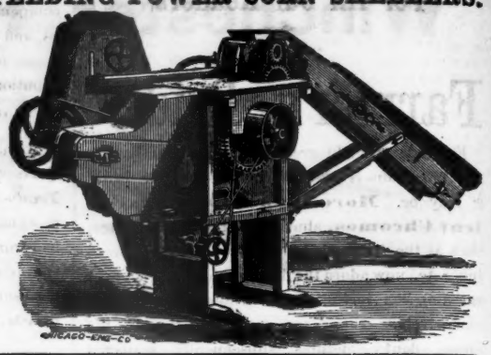
SPEED REGULATOR.

Heebner's Improved Threshing Machines. Send for Illustrated Circulars to

HEEBNER & SONS, Lansdale, Mont Co., Pa.

ADAMS' PATENT SELF-FEEDING POWER CORN SHELLERS.

Strong, reliable, thorough in all parts of their work, (shelling, separating, cleaning, and elevating). Perfect self-feeders, and best machines for mill and warehouse purposes, as well as for farm and plantation. Their superiority attested by twenty years' use in the heavy corn-growing sections, during which time they have received first premium at all State and World's Fairs wherever exhibited.



MADE BY THE

Sandwich Manufacturing Co.,

Sandwich, DeKalb Co., Ill.,

Who are also makers of

The Best Hand Corn Shellers in the Market.

Send for Circulars.

Live agents wanted in all corn-growing districts East and West. Correspondence solicited.

SOMETHING NEW!

PULLIAM'S PATENT

BOLSTER SPRINGS for FARM WAGONS.

This new and valuable device is suited to wagons of any size—made of the best steel and warranted—are attached by four bolts through the bed—can be put on by any person. They remain on the wagon for all uses, and work equally well whether with empty or loaded wagon. There is no use for a spring seat—they make a comfortable spring wagon out of a farm wagon—and save largely in wear and tear. We Want Agents Everywhere.

SEMPLE & BIRGE M'F'G CO., St. Louis, Mo.

S. L. ALLEN & Co., 229 Market St., Phila., General Agents.

The Phœnix Drain Tile Machine

Is claimed to be the most simple, strong and durable machine now in the market.

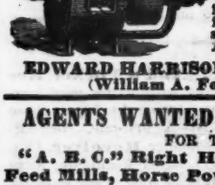
May be driven by either Steam or Horse-power, and will make either Tile or Brick of a quality that is unsurpassed.

Purchasers will note the substantial as well as finished make of this machine; the easy accessibility of its working parts; the means of keeping its plunge-chamber to fit closely, without reference to age or wear; and its general suitability for making Tile at the lowest cost. SEND FOR CIRCULARS.

CHANDLER & TAYLOR, Indianapolis, Ind.

HARRISON'S MILLS,

NEWLY IMPROVED.



New Standard Flouring Mill.
New Standard Corn Mill.
Capacity of 12-inch Mill, 2 to 12 bus. per hour; capacity of Light 30-inch Mill, 6 to 40 bus. per hour.

Wholesome Bread, Fine Flour, High Speed, Quick Work, and Economical Milling Fully Established. For illustrated catalogue, describing the Harrison System, Address Estate of

EDWARD HARRISON, New Haven, Conn.
(William A. Foskett, Administrator.)

AGENTS WANTED EVERYWHERE

FOR THE

"A. B. C." Right Hand Corn Shellers, Feed Mills, Horse Power Threshers, etc.

Liberal terms.

A. B. COHU,
197 Water St., N. Y.

FARMERS, if you don't find my Patent Adjustable Harrow with your implement dealers, you can order from the factory at wholesale price. It pleases all that get it. Send for circular. S. HUTCHINSON, Griggsville, Pike Co., Ills.

CORN SHELLERS AND CORN MILLS.

Over 20,000 in Use.

Every machine guaranteed to give satisfaction, or money paid will be promptly refunded.

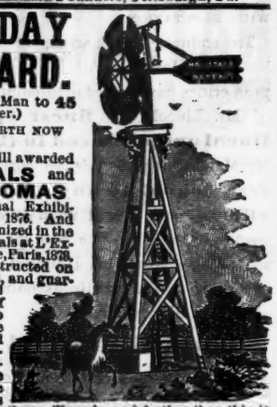
Shellers $5, Mills $12.

Every farmer should have one. Send for Descriptive Circulars.

Live Agents Wanted.

LIVINGSTON & CO., Iron Foundere, Pittsburgh, Pa.

HALLADAY STANDARD.



(17 sizes—from 1 Man to 45 Horse Power.)

$3,500,000 WORTH NOW IN USE.

The only wind-mill awarded **TWO MEDALS** and **TWO DIPLOMAS** at the International Exhibition, Philadelphia, 1876. And the only Mill recognized in the distribution of Medals at L'Exposition Universelle, Paris, 1878.

This mill is constructed on scientific principles, and guaranteed to do good work in any kind of wind. It is also guaranteed to be well made of good material; to be perfectly self-regulating; to possess more power; to be more reliable in all kinds of winds, than any other mill made, and further than this, it is **Guaranteed NOT TO BLOW DOWN.**

Send for **CATALOGUE "A"** and Price List.

U. S. WIND ENGINE & PUMP CO., BATAVIA, ILL.

STEDMAN & CO.,

MANUFACTURERS OF

ENGINES, SAW MILLS, SHAFTING, PULLEYS, and HANGERS. HAY and COTTON PRESSES.

Power Corn Shellers and Cleaners.

AURORA, INDIANA.

Big Giant Corn Mill,

Every Man His Own Miller.

The only Mill that will grind Corn with Shuck on without extra expense. The only Mill grinding Corn and Cob successfully that will grind Shelled Corn fine enough for family use.

Grinds twice as fast as any other Mill of same size and price.

MANUFACTURED BY

J. A. FIELD, SON & CO., St. Louis, Mo., U. S. A., & Hamilton, Ont., Canada.

CIDER PRESSES,

Apple Graters, Elevators, Etc.

BOOMER & BOSCHERT PRESS CO., SYRACUSE, N. Y.

Improved Baldwin's American Fodder Cutter.

The Simplest and Best! Only three Feed Gears! Cuts all kinds of feed, hay, straw, and corn-stalks with ease and rapidity. Power cutters fitted with our **Improved Safety Fly Wheel,** which secures perfect safety to the operator and machine. See large advertisement in Oct. No. of *Agriculturist.* Send for illustrated circular. C. PIERPONT & CO., Manufacturers, New Haven, Ct.

Winchester Repeating Fire Arms.

LARGE REDUCTION IN PRICES.

	Model '66.	Model '73.	Model '76.
Sporting Rifle, Octagon Barrel	$23.00	$27.00	$35.00
" " ½ " "	23.00	27.00	35.00
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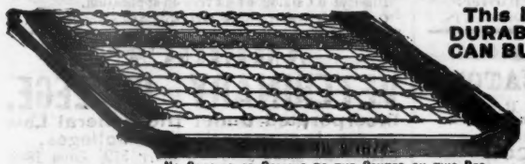

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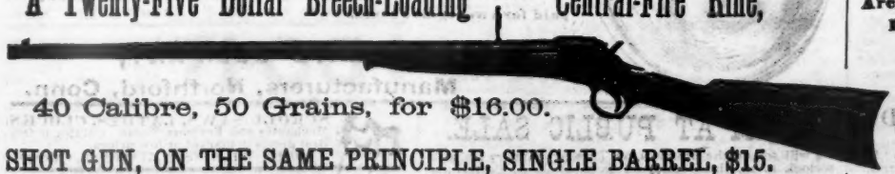

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☞ The most elegantly proportioned and beautiful Pistol in the world. *This engraving is made from a* **photograph,** *and exactly represents this most superb Revolver in every particular,—*size, shape, and finish.

When we offered our new Rob Roy at $2.50 we considered that we were offering the biggest bargain ever known, and we were; but the Alexis is a better weapon in *every particular* than the Rob Roy, and is as good in every way and better in some than a Smith & Wesson or Colt. The fact that this Revolver could not be made for $2.50 is self-evident (the engraving alone costs $2.00); we will explain our ability to furnish them. It is a well-known fact abroad that Revolvers are made better in the United States than elsewhere, and cheaper; just before the late Turco-Russian war the largest order ever placed in this country for Revolvers was received by one of the largest manufacturers in Connecticut from a leading firm in St. Petersburg, Russia, Messrs. Wladimir Ivanhoff & Co., *for* 30,000 of the above Revolvers, the *actual cost* of which was to be not less than $6.50. The entire lot was put through the works, and the first delivery and payment thereon made; the war prevented the above firm from fulfilling the contract, and threw the goods back on the manufacturers' hands, and we have just completed negotiations which gives us sole and exclusive control of the entire lot at **one quarter their actual cost.** Every Revolver is made *on honor*, the engraving is the finest ever seen in this country, the workmanship equal to a COLT. The stocks are **Ebony,** the most expensive wood that could be used for this purpose. The metal is finest English steel, the barrel being superbly rifled its entire length; the barrel is octagon, the cylinder fluted, as shown in cut. The shape of this Revolver is what is called the New Russian Model (similar to the Smith & Wesson 38 calibre, N. M.), giving a firm grip in the hand, preventing the Revolver's throwing up, and producing elegant shooting at long range. **This Revolver uses the EXTRA LONG Rifle Cartridge,** *and will hit at* 100 *yards.* The calibre is 22. It has an extra heavy and very long barrel, greatly enhancing its value as a target pistol. The demand for this Revolver will be unequalled, and we respectfully suggest an immediate order. **We guarantee more than satisfaction** in every instance, and a better Revolver than $10 will buy from any other firm. They are simply elegant in design and finish, as the above beautiful engraving shows (the engraving being made from a photograph of the Revolver, *exactly* represents it), and we will refund the money in every instance where our representation is at fault. Every one should own a good Revolver, and this opportunity will **never occur again.** We will send this Revolver C. O. D., with privilege of examination at the express office, to any point east of the Mississippi River on receipt of one dollar, which will be deducted from the bill; or we will, when the cash *in full* comes with order, **give free** a box of extra long target Cartridges. (*The fact that this Revolver uses the extra long Rifle Cartridge makes it doubly valuable, and places it far ahead of all similar ones in the market.*) We will send it by mail to any address for 20 cents extra; if sent by mail cash in full must accompany order; we cannot send C. O. D. by mail, *neither can cartridges be sent by mail.* A full and complete set of cleaning tools go with each Revolver, and they are packed in an elegant box. The prices will be as follows, from which no deviation will be made, except in dozen lots:—Alexis Revolver, as described above, with **EBONY** Stock, $2.50; with an elegantly engraved Rubber Stock (same as on Smith & Wesson), **$3**; with a fine $2 Ivory Stock, **$3.75**; or with an elegant $3 Pearl Stock, **$4.50.** The *last* Revolver we believe will compare with any $15 Revolver in the world, and for presentation would make an elegant and beautiful gift. **We know that this Revolver is all that we claim for it, and is the biggest bargain we will ever offer.** *Those who bought our Rob Roy last Spring will have no hesitation in purchasing the Alexis, for big a bargain as the Rob Roy was, this Revolver is far* ahead of it.

☞ EVERY PART INTERCHANGEABLE. IF BROKEN CAN BE READILY DUPLICATED. ☜

An "A. 1" Revolver for $2.50.

It is the most extraordinary bargain ever offered in the Gun line. Full nickel silver plate, 7 shot, self-revolving cylinder; and uses extra long Rifle Cartridges

The Alexis.—The new Russian Model Revolver. The readers of the *Agriculturist* are already familiar with this weapon through the press notices and praises from hundreds who have purchased, in every state in the Union. As some misunderstanding has existed in the minds of many concerning the *exact size* of the Alexis, we present here an engraving of the Alexis—exact in size, shape and finish. An immediate order will be necessary to secure one; we cannot promise to advertise after Feb. 15, 1878. The Alexis Revolver has had the largest sale of any Revolver ever advertised in this paper. Its sales have averaged **500 per day,** second to none. Its merits are becoming known to sportsmen and others, and the mere work of opening our letters has often taken the time of two clerks all day. Those who have bought one have frequently ordered 50 or 100 by first mail after securing a sample, and one Alexis Revolver sent to a country town has brought us more than 300 more orders from that locality. As we have stated, the Alexis Revolver is, as we believe, the biggest bargain ever offered to the American people. Present could not be made to any man or woman, and in these times of murder and outrage no one should be without protection. **Buy State Arms Co., 93 Water St. Boston, Mass.,** SOLE AGTS.

RELIEF FOR HARD TIMES!!
A Sure Investment!!
BUY LAND OF
THE UNION PACIFIC RAILROAD COMPANY.

This Company has **3,000,000** acres of the **Best in the world;** for sale in **NEBRASKA,** at **Prices** and on **Terms** that make it **cheaper** to **own a farm** than be without. **Short Winters! Long Summers! Come and see. Cheap fare from all principal points.**

Write for information. **Sent Free** everywhere.

LEAVITT BURNHAM,
Land Commissioner U. P. R. R. Co.,
Cor. 9th and Farnam Sts., **Omaha, Neb.**

☞ Refer to this advertisement.

Reliable Silver-Plated Table Ware.

"Silver Steel" and "Albata" Silver-Plated.

Save the retailers and jobbers profit, and buy direct of Manufacturers at Wholesale Prices.

An opportunity is now given to buy direct any of the silver-plated ware manufactured by us. The goods are made of good durable metal and will wear for years.

These are not cheap brass goods, like the so-called "Premium Silver Ware," with which the market is flooded, but are warranted as represented. **Remember, brass goods are poisonous!**

We will pay postage on small packages by mail on receipt of the price.

6 Table Knives, solid steel handle and blade, all silver-plated	$2.50
6 Desert or Tea Knives, all silver-plated	$2.00
12 Steel Tea Spoons, silver-plated, ornamented	$1.50
12 Steel Table Spoons, silver-plated, ornamented	$2.00
12 Silver Steel Table Forks, silver-plated, ornamented	$2.00
1 Gravy Ladle (8 in. long), Albata, silver-plated	.75
1 Soup or Oyster Ladle (11 in. long), Albata, silver-plated	$1.25

(See illustration, which shows style of last two mentioned articles.)

The entire set (50 pieces) $11.00

Liberal discount from these prices to dealers and agents.

☞ **Single pieces of any of the above (except the Ladle), sent postpaid for twenty-five cents.**

ELECTRO-PLATE COMPANY,
Manufacturers, Northford, Conn.

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MINNESOTA AND DAKOTA

OVER 1,000,000 ACRES of FINE FARMING LANDS IN MINNESOTA AND DAKOTA,

For sale by the WINONA & ST. PETER R. R. CO., At from **$3** to **$6 per Acre,** and on liberal terms.

These lands lie in the great wheat belt of the North-West, and are equally well adapted to the growth of other grain, vegetables, etc. The climate is unsurpassed for healthfulness.

They are Free from Incumbrance.

Circulars, Maps, etc., containing full information, sent free.

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Gen'l Offices C. & N.-W. R'y Co., CHICAGO, ILLS.

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I will sell on the premises, on Tuesday, January 7th, at 2 o'clock P. M., the Homestead farm of J. A. Casterline, dec'd, containing 135 acres suitably divided into wood, pasture and plow land. Two miles from Dover Station, on the Del., Lack. & Western R. R., and 1¼ hours from New York. The farm and buildings are in good condition, barns large, location healthy, plenty of purest spring water, and choice fruit, and in the celebrated Morris Co. peach region.

J. ANDREW CASTERLINE, Adm'r.,
DOVER, NEW JERSEY.

FOR SALE.—160 acres of land, at $13 per acre. 4½ miles from City; 80 acres under cultivation; a peach and plum orchard, grapes, currants, etc. 10 acres of young timber, two good wells, and other improvements. For particulars, address A. Wallace, Cawker City, Mitchell Co., Kans.

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250 MARYLAND FARMS, in Tracts from 80 to 500 acres.

Near railroad and navigable Salt-water (with all its luxuries), in Talbot Co., Md. Climate mild and healthy. Titles good. New Pamphlet and Map showing *location*, free.

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SCROLL SAWS, LATHES, CLOCKS, Mechanics and Farmers Tools. Catalogue free. Best goods in market at low prices.
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Country Seats and Farms of all sizes, for sale, on the North Penn. R. R., near Philadelphia. Prices low, and easy terms. Address N. GUILBERT, Gwynedd, Pa.

BUY MARYLAND FARMS! $7 TO $25 per acre. Catalogues sent free.
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300 FARMS in the best part of MARYLAND *at panic prices.* For Catalogue and Price List address MANCHA & WILSON, Ridgely, Md.

FARMS.—Delaware Fruit and Grain Farms at low prices.
A. P. GRIFFITH, Smyrna, Del.

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